

READER'S RIDE OF THE YEAR!

Radio Control

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CAR ACTION

THE WORLD'S PREMIER R/C CAR MAGAZINE

January 1993

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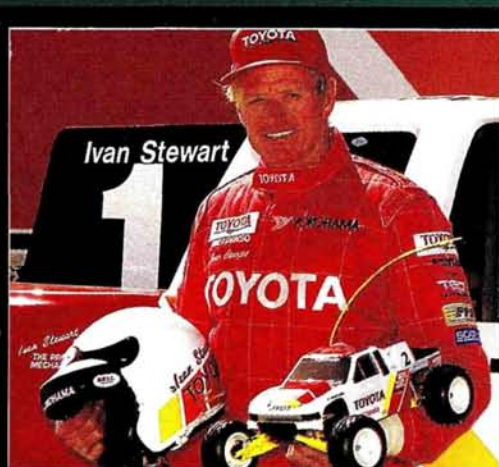
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ON THE COVER: Philip Simms' DuraTrax/LX-T gas conversion at the Kyosho World Challenge. (Photo by John Howell.)

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EDITORIAL

"HOMEY DON'T BUILD DAT"

WOW! It's already time for our annual "Reader's Ride of the Year" issue. How time flies! Why, it seems like only yesterday...what? Oh, OK; enough rambling.

You guys! You're always coming up with wacky projects—home-built this, scratch-built that. One reader even sent in pictures of his R/C coffee table. In the photo, the table had one of those "fish-wrap"



This photo epitomizes the general feeling of disgust that prevailed at the Off-Road Nats. These trophies were won by Carlos Gonzalez.

rags on its top, so naturally, it went in the "round file"—flush! Sorry buddy.

Anyway, this year's winner is Fred Horton, and part of his project is an R/C utility truck—the kind that installs telephone poles! I'm not kidding! For three weeks, I've had a 1/10-scale telephone pole under my desk. I think it's a broom handle. I was toying with the idea of driving my RC10 into it so the power would go out and I could go home. I need a vacation.

THE LAST WORD

In this issue, you'll find extensive coverage of the '92 ROAR Off-Road Nats. This is the infamous race that you've been reading about in the last few issues of

Car Action. If you didn't attend this event, you may be asking yourself why everyone is dumping on it. Here's the answer: no matter what, something will go wrong at a race—without exception. This is normal and, for the most part, people expect it and deal with it. Former ROAR Administrator John Thawley once told me that any big race is a disaster before it ever begins. The trick is to manage the disaster. For whatever reason, the facility and crew at Norm's just weren't up to the task. The result was this: of the 500 racers there, not one (including the winners) had anything good to say about the event. In fact, to get in the proper mood to write the race coverage, I listened to a new, depressing Roger Waters song.

I'm not even angry for personal reasons; I didn't race there, I just attended. I'm mad because this could really sour some people toward R/C racing—exactly what we don't need! This is the very last issue of *Car Action* in which you'll have to read about this race—I promise! But I've got this thing about having the last word: c'mon guys, get it together!

Frank Masl

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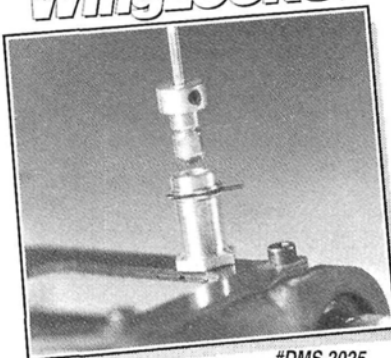
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LETTERS

Write to us! We welcome your comments and suggestions. Letters should be addressed to "Letters," *Radio Control Car Action*, 251 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

'FOOT PROBLEMS

I just got into R/C, and I have a few problems. I bought a Tamiya Blackfoot, and I'm having trouble with the gearbox. It worked fine for about a month, but then the gears started to make a grinding noise. I took the gearbox apart and replaced the gears. It worked for a while longer, then the problem returned. I called the hobby shop where I bought it, and they said that the grinding is caused by going from forward to reverse without coming to a complete stop. The only problem is, I do wait until my 'Foot has stopped before I put it into reverse.

BRIAN CANNADAY
Hinsdale, IL

Brian, have you checked your rear half-shafts (drive axles) to see whether the hex-head has been rounded off? That may be contributing to your tranny problems. Once they become rounded, they slip, and your truck goes nowhere. If that isn't the problem, make sure that your pinion gear is properly mated with your counter gear. If it's only making partial contact, the counter gear won't hold up for very long. Check the bevel gears for damage, too. Did you replace the stock bushings with bearings? If you didn't, the stock bushings may be shot; that can cause a sloppiness in the tranny that will easily strip your gears. If none of those areas is the culprit, check out the Blackfoot driveline components from Thorp Mfg. Inc. or Robinson Racing Products. They make everything you'll need to get on the good 'Foot!

JH

COMBUSTION CONFUSION

I'm planning to buy a Kyosho Inferno, and although I have a pretty good idea of how they operate, I'd appreciate it if you could answer a few questions.

1. What do glow plugs do?
2. Are they similar to spark plugs?
3. Do you need a new one for each run?
4. What's the correct way to break-in an O.S. .21 RX-B engine?
5. How does the fuel's nitro content affect run performance and run time, if at all?
6. Why does the fuel tank have to be pressurized?
7. Doesn't anyone sell after-market pipes?

BRIAN ROSS
Wheaton, IL

Brian, here you go:

1. Basically, glow plugs are first electrically heated to start the engine; after the engine has been started, the glow-plug coil retains enough heat from the previous combustion to enable it to fire the next cycle.
2. Glow plugs perform a similar function to spark plugs, but they don't have a timed spark.
3. No, you don't need a new one for each run. They should last for quite a while, depending on weather and fuel mixture.
4. Some people I know break-in their motors by running them on a workbench while they turn a model airplane propeller. Other people put them directly in their cars and run them with a slightly rich needle setting. No matter how you break-in your motor, running it rich for a couple of tanks can never hurt, even if the engine has an ABC piston/liner combination.
5. Nitro definitely improves mid-range throttle response and increases top-end power.
6. A fuel tank is pressurized because fuel draw is totally the result of negative crankcase pressure. Anything that helps fuel flow, e.g., using a muffler tap to positively pressurize the fuel tank, is welcome assistance in getting the fuel out of the tank and into the carb.
7. Yes, companies do sell after-market pipes: Paris, Picco, Serpent and McCoy all make high-quality pipes.

CC

RAIN-READY

It seems as if every time my club gets together to race, it starts to rain. We've run a couple of times in the rain, but when we do, I worry about the electronics in my 10L. Is there any

way to make the electronics in R/C cars more water-resistant? What can I do to make my ESC (Novak 610RV) water-resistant, yet still keep it cool? What about the receiver? I'm not too concerned about the motor; when you're racing in the rain, you don't need a lot of speed, and stock 540s do really well in the rain. I enjoy running my car in foul weather. Puddles on the track present a real driving challenge, as well as a lot of visual excitement.

ROB WIRTZ
Mililani, HI

Running in the rain sounds interesting, Rob, but it tends to wreak havoc on electronics. You can cover your receiver in plastic wrap, or put it inside a balloon, which you then seal. For your speed controller, you can do the same. The speed controller will get hotter, and if it's a modern ESC that has temperature-sensing circuitry, it may shut down. Your steering servo should be fairly water-resistant, so don't worry about covering it. No matter what steps you take, something might eventually fry if you keep running in the rain.

JH

RADICAL CAR, MAN!

I'm 10 years old and getting ready to buy my first R/C racing car. The local hobby shop just got the new Traxxas Rad 2, and it looks like a fantastic buy! Is it really as good as the advertisement says? I need more info on it fast. Can you do a track report on it? If you have already reviewed it, what issue is the report in? What other cars should a beginner consider buying?

MIKE HILL
Helena, MT

Have no fear Mike, you can look for a review of the Rad 2 in our next issue. Tamiya, Kyosho, Associated, Schumacher and Team Losi all offer kits for beginners. It's up to you—and your budget—to decide which one will suit you best.

JH

PRETTY IN PINK

I really enjoyed your article on the Blue Eagle

(Continued on page 10)

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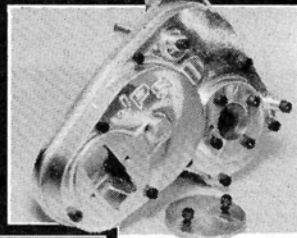
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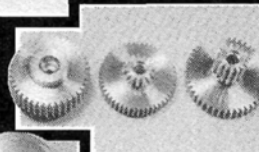
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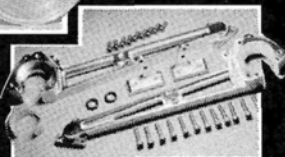
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L.S. In the first stages of the project, the author said that he dyed some parts hot pink in boiling water. I was really impressed with the final project, and I want to know which parts are good to dye and which parts aren't. It also said that this process made the parts stronger, and I want to know if this is helpful for racing.

ERIC MILLER
Stewartstown, PA

Certain nylon parts, e.g., suspension arms, rims, bumpers and other miscellaneous nylon items, benefit from being boiled—as you do if you dye them. When nylon parts are boiled, they tend to become more flexible, and they withstand hard crashes better than non-dyed parts. The only drawback to dyeing a part is that if its surface becomes deeply scratched, the original color will show. If that's something you can live with, then go for it. JH

SHRINKIN' CONTROLLER

I need help! A couple of weeks ago, I smashed my Tekin 410S speed controller's red case, so I wrapped it in shrink-wrap. Is that OK? If not, can you give me Tekin's address? Great mag!

TIMOTHY MARTINEZ
San Jose, CA

If your speed controller works well with the shrink-wrap around it, then stick with it if you want to. Be careful if you run through any water; that could fry it. Always keep an eye on it, and if the shrink-wrap starts to melt around the controller, you might want to get a new case. If so, contact Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672; (714) 498-9518. JH

BEEFED-UP BELGIUM

I bought a Tamiya Top Force car. Now I'd like to upgrade the car, but in Belgium and elsewhere Europe, there isn't a company that makes hop-up parts like gears, wheels, graphite chassis and front and rear arms. I'm writing to your magazine in the hope that you can help me to find the address of a company where I can buy these parts.

DECOO PATRICK
Oostende, Belgium

Decoo, check with Tamiya America Inc., 101 Columbia, Aliso Viejo, CA 92656 and Custom Racing Products, 8784 Plata Ln., Atascadero, CA 93422. They should be able to help you in your search for more performance. JH

(Continued on page 178)

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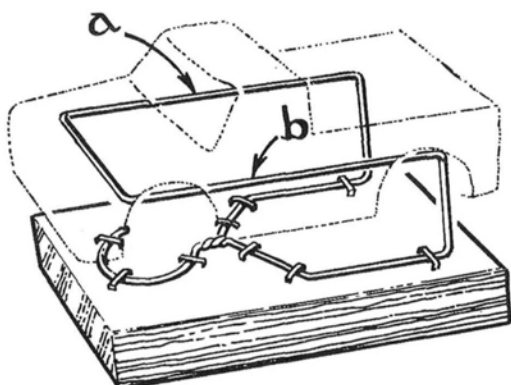
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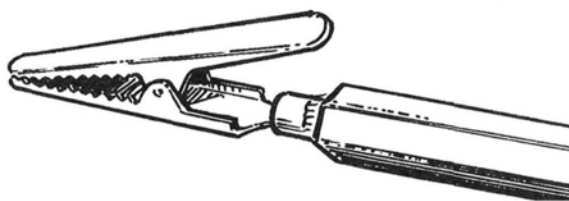
by JIM NEWMAN



BODY-PAINTING JIG

Fold a wire coat hanger as shown, then staple or glue it to a wooden base. Use it to hold a body shell while you paint it. Spread the rails (a) and (b) slightly so that they'll hold the body securely.

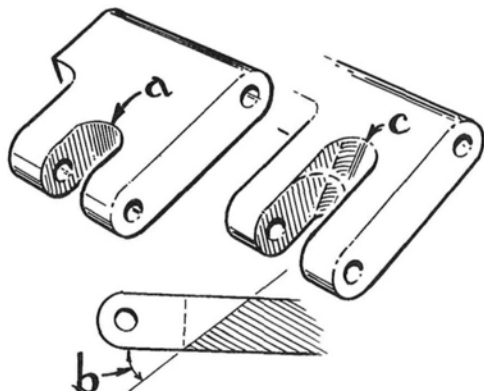
Joe Martinez, Watsonville, CA



ALLIGATOR-CLIP PARTS HOLDER

You can turn old ballpoint pens into useful tools. Glue an alligator clip into the end of one to create a small parts holder that will be useful when spray painting. Glue a compass point into the end to make a scribe or a pick-up tool.

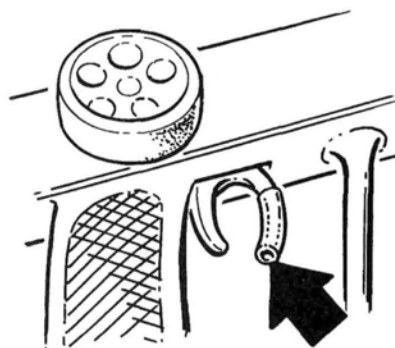
Jay Wallace, Ashland, OR



RC10 DOGBONE INTERFERENCE

If you've noticed that your RC10's dogbones rub the rear arms at (a) and cause friction and power loss, file the arms at an angle (b) to make a slope (c). This will give more clearance for the dogbones when the suspension is working through its full range.

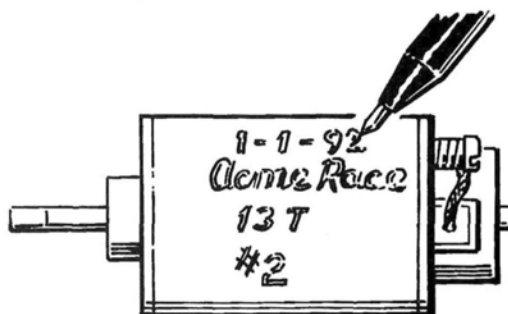
Thomas M. Jacobus, Princeville, IL



NO-SLIP TRIGGER

If your finger slips off the brake trigger, or if you have small hands, cover the trigger with a short piece of rubber fuel line from the hobby store.

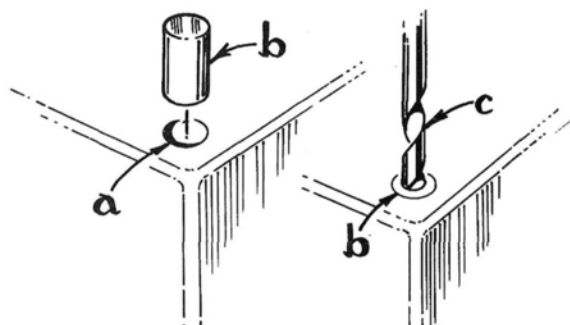
Brett Thompson, Salt Lake City, UT



MOTOR IDENTIFICATION

If you own more than one motor, make them easy to identify: on the can, engrave the date bought, the manufacturer, the number of winds and the motor's i.d. number. With this information, you can keep track of the motor's age, and you'll know when to replace it.

Coles S. Harris, Portsmouth, NH

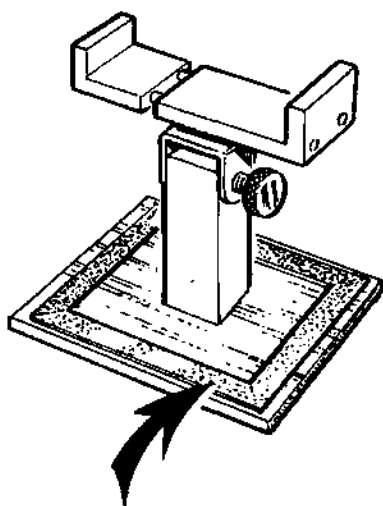


REFURBISH STRIPPED THREADS

If you've stripped the threads out of a plastic part, drill the hole (a) to enlarge it to take the plastic "leg" of the car's parts tree (b). Glue a short length of this plastic tree into the hole (b) then re-drill and tap (c) for the screw.

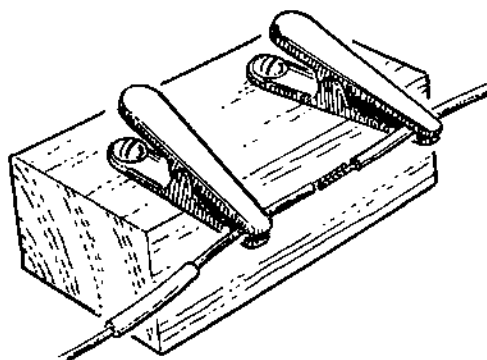
Justin Channel, Sheridan, WY

PLEASE NOTE: Be sure to print your name and full address clearly on every letter and sketch you send to Pit Tips. We have to throw away many good tips because we don't have the sender's name or address.



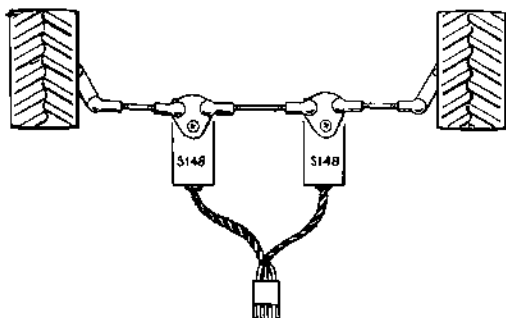
MAGNETIC PARTS TRAY

Put magnetic strips around your work stand tray to catch small steel screws, pins and springs. *Ben Duclos, Bothwell, WA*



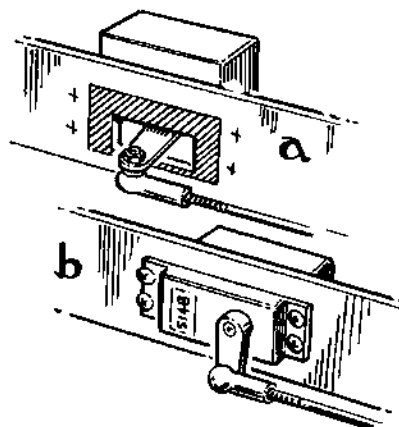
THIRD HAND FOR SOLDERING

Screw two alligator clips to a short piece of 2x4 wood, and use them to hold wires together while you solder them. If you want to, you can set a large screw or nail in the top of the block to hold your roll of solder. *Al Signore, St. Davie, FL*



MORE BLACKFOOT STEERING POWER

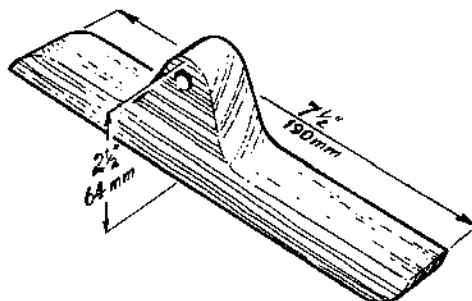
Use a Y-harness to join two Futaba S.148 servos in parallel, then mount them as shown with a pair of servo savers (shave off a little to create clearance). To make space for the extra servo, you must use an ESC. *Jose Caban, Bayamon, Puerto Rico*



PRO RADIANT SERVO MOUNTING

If you don't think that your servo-mounting method works very well, try this. Modify the right-side chassis rail to accommodate a full-size S.148 servo. In the original mount (a), the servo arm came through the chassis rail. Cut away the shaded area of the chassis, and mount the S.148 servo as shown (b). It fits perfectly and the drive chain doesn't touch it at all.

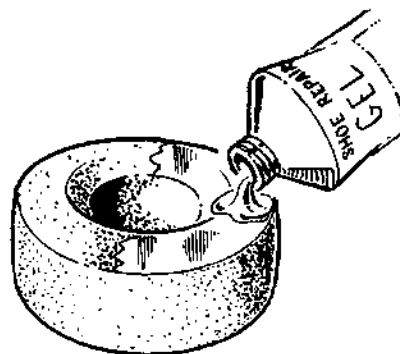
Brian Siebensschuh, Brunswick, ME



SNOW RACING SKIS

These skis are easy to cut out of a good hardwood, e.g., maple or beech. Drill the hole to fit over the front wheel axle, then sand the ski and coat it with polyurethane varnish to protect it.

Asif Mian, Mahwah, NJ



FOAM TIRE SIDEWALL SAVER

Contact with other cars or barriers often removes chunks from the sidewalls of foam tires. To minimize this damage, spread Shoe Goo glue or a similar coating on the sidewalls. It dries quickly and remains flexible, yet it doesn't seem to interfere with a car's handling. *Tim Lansberry, Brighton, MI*

Radio Control Car Action will give a one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Pit Tips." Send a rough sketch to Jim Newman, c/o Radio Control Car Action, 251 Danbury Rd. Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.



INSIDE SCOOP



by CHRIS CHIANELLI

IN SEARCH OF GLORY AND THE GOODIES THAT WILL HELP YOU GET IT!

POINT BLANK PERFORMS

If all goes according to plan, by the time you read this, the name Point Blank will be showing up at hobby shops across the country. Preliminary tests show this line of motors, batteries, motor sprays and other products to be of very high quality and on a par with anything out there. Creative new marketing concepts and vastly improved distribution efficiency enable hobby shops to offer Point Blank products at low, mail-order prices. Look for Point Blank products at your local hobby shop.

FLASH! Just in! Niesinger quits Team Associated to head up Team Point Blank! Stay tuned to channel "S" for details.



WORLD SCALE OFF-ROAD



With the daring new World Scale Off-Road vehicles, Model Rectifier Corporation (MRC), a pioneer in the hobby industry since 1947, has once again gone where no model company has gone before. I'm holding the Thunder King high-performance truck and the Desert Thunder racing buggy is being held by Frank Ritota, V.P. of product development at MRC. As you can see, these are big R/C vehicles; they have 50 percent more mass than a 1/10-scale car. With features such as oil-filled,

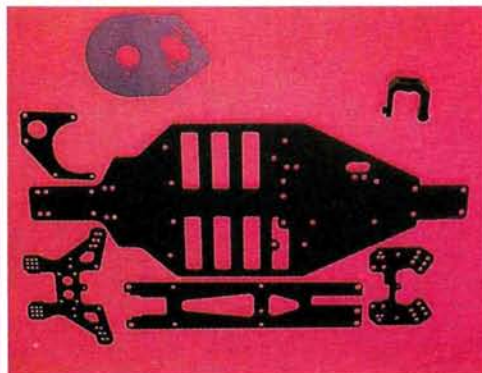


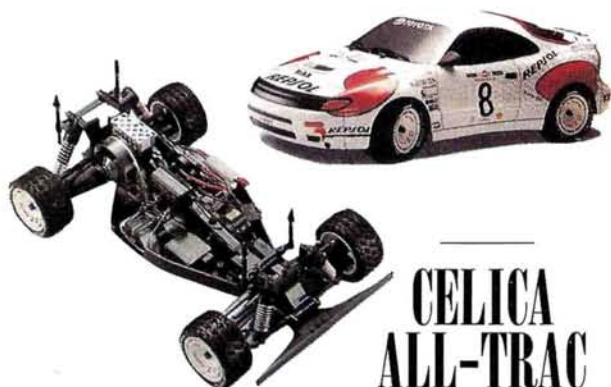
adjustable coil-over aluminum shocks, a ball-bearing tranny with an adjustable ball-diff, an aircraft-grade aluminum chassis and twin 540 motors driving a

common slipper clutch, the World Scale design really seems to have the right stuff. The best part is the driving. Not only are these large vehicles very stable and easy to drive, but they're also very scale-like in action. By the way, yours truly drove the Thunder King into a cinderblock wall at full speed, over a dozen times! No damage—none. These things are very, very tough.

LAZERS SET TO KILL

Our mole in the Kyosho works (code name "Champaign") has informed us that there have been several changes to the popular Lazer ZX-R 4WD racer. These changes, which come from Kyosho's extensive R&D as well as its race experience, include a graphite "Worlds" chassis with battery slots that have been moved back 5mm to improve weight distribution; an upper plate to go with the improved chassis; a motor-mounting plate; wider front hubs that also add 7 degrees caster; a kingpin set that allows use of ROAR-legal 2-inch rims without modification; and new, stronger front and rear shock towers with improved shock-mounting geometry. For those of you who already own Lazers, these parts are also available separately from Kyosho. Kyosho is truly "on the gas," as *Car Action* associate editor John Howell would say.





CELICA ALL-TRAC

This new Celica All-Trac rally car from Kyosho is basically a Lazer Sport. It has a Kelron chassis and its drive train is all Lazer. A rotary speed controller and 540 motor are

included. It probably has plastic shocks, but this is unconfirmed as yet. If you live in the city, these rally cars make excellent on-road, concrete-jungle machines.

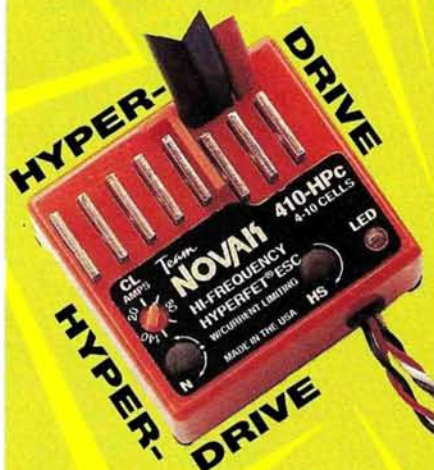


SILICONE SILK-RIDE

Silatech is Team Losi's new temperature-stable, competition-grade, silicone-based shock oil. According to Team Losi, Silatech is good for all oil-filled shocks, and it

reduces seal swelling and something called "stiction," which causes unwanted drag on the shock shaft. Silatech is color-coded for easy viscosity identification.

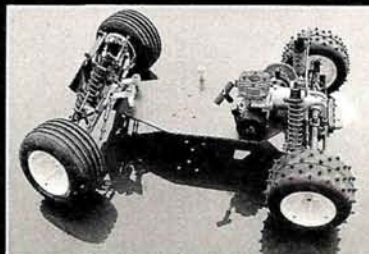
According to Novak, no other controller of its size can match the low voltage loss of its newest high-frequency electronic speed controller, the 410-HPC Hyperfet. Novak credits the 410's performance to the Hyperfet transistors in its drive circuitry and to the 12-gauge power wires. Also noteworthy are the claim of 100 amps of braking power and the solid-state reverse-voltage protection, which

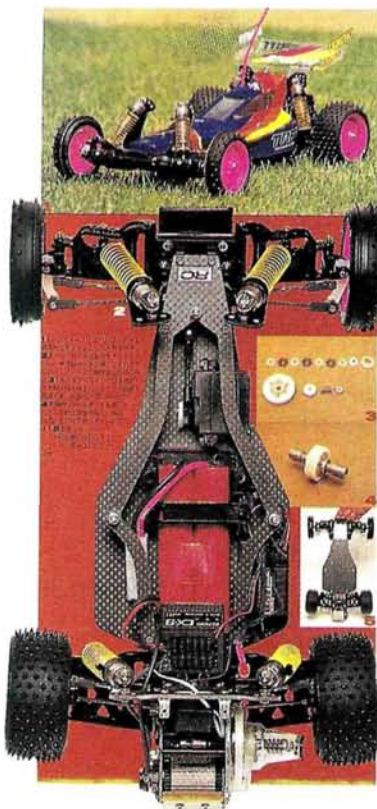


eliminates the need for fuses. Its dimensions are 1.61x1.44x0.67 inches; it has a current rating of up to 300 amps, and it can be yours for just \$195.

DURATRAX GLOWS IT

In response to the ever-increasing popularity of 1/10-scale gas kits, DuraTrax has introduced glow-powered conversion kits for the Team Associated RC10T car and Team Losi LX-T racing truck. First spotted at the '92 Kyosho Gas World Challenge, the kits allow owners of LX-Ts and RC10Ts to adapt their trucks to use gas power. The kits include a chassis plate, a chain-driven tranny with a ball diff, and a reliable O.S. CZ-R .12 engine with a pull-starter. Incidentally, at the World Challenge, Team DuraTrax/Composite Craft driver Ruffy Rios TQ'ed the hotly contested 1/10-Scale Truck Class. Be on the lookout for these beasts at your local track.





Tamiya Race Factory

Take a look at the machine on the left. We always knew they could do it; it was simply a matter of when—and if—Tamiya wanted to. TRF is Tamiya's experimental race program in Japan and Europe, and the TRF211X is the 2WD contender of the team. Look at this car: it has long-throw shocks, a slipper clutch, a ball diff, rear toe-in, a graphite dual-plate chassis, ya-da-ya-da-ya-da—obviously a serious race car. I'm sorry to tell you that this car isn't currently available in the states. It should be. I thought you had the right to know.



NEW TAMIYA MOUNTAINEER

Do you remember the Tamiya Bruiser? Many people were very upset when that precedent-setting monster truck was discontinued. Well, good news. Tamiya has introduced the Mountaineer, which uses the basic running gear of the Bruiser, but also includes many improvements. Best of all, that complex three-speed transmission, which was a pain to build, now comes assembled with the Mountaineer. Watch for it.

ZIP PAK™

Professional Power for Pennies...



It has been said the human hand is better than a computer at assembling battery packs. Don't believe it! Computers don't have bad days. They don't break up with their girlfriends and they don't have headaches. People do. That's why they don't always do the same job the same way twice. They're only human.

That's why Trinity uses an exclusive, computer-controlled, automated assembly system for their Zip Pak. Reliability and consistency are programmed in and never vary.

This automation is combined with the very finest materials. The cells are Sanyo KR1300SC (1300mAh) and there has never been a world champion that didn't run Sanyos. They've never lost! All tabs are pure nickel and as short as possible to minimize resistance. Each is double welded, and all wires are pure copper with silicon insulation. The entire assembly is pressed into a precision fitted tube which protects it from the rough and tumble world of racing.

As the bare, assembled pack nears completion, it is connected to an instrumented quality control panel which measures all facets of the pack's performance. Only then is the Zip Pak label applied.

The result is the lowest cost, highest quality sport pack available.

Buy several as back-up spares. Never be short of power.



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BAGZ IT

Are you good enough to use the same bags that Team Losi does? Well *these* are the new official bags of the Team Losi race crew—Dirt Bagz. The Dirt Bagz lineup includes the Dirt Bagz R/C Impact Bag (\$45) for your cars and trucks, a Concept V-3 pit stand (\$15.95), Dirt Bagz Battery Bagz (\$4.25) and roll up Tool Bagz (\$7.95). The Impact Bagz are made of extremely durable polyester, and they have YKK zippers. There are vinyl battery pockets inside the bag, and the bottom is padded with high-density foam. For more info, contact Derek Nye at Dirt Bagz USA, 200½ Diamond Ave., Balboa Island, CA 92662; (714) 675-5810. Dealer inquiries are welcome.

SOLAR INSANITY

Thought you might like to see this lineup of creative solar-rolling madness going on in Japan. Some might say the sun is affecting their brains more than their cars. Looks like fun to me. Our Editor, "Howdy-head" Masi, really loves the kitty-cat.



Winning by Design

• The TRINITY Championship Series™ •

Trinity's Championship series of motors is well named. The 1991 record books clearly show the Championship Series has been the hands down winner in all types of modified racing.

1991 NORRCA 4wd Dirt Oval.....National Champion
1991 ROAR 1/10th On-Road.....National Champion
1991 ROAR 2wd Dirt Oval.....National Champion
1991 ROAR 2wd Off-Road.....National Champion
1991 ROAR Monster Truck.....National Champion
1991 Cleveland Indoor.....National Champion

Championship motors are fast and are the first specifically designed to use Sanyo's new 1700SCRC and Panasonic's P170 SCR batteries.

RC1700	Nuclear Meltdown™	(9T, Dbl)	\$80
RC1777	Kevin, Kevin™	(10T, Trpl)	\$80
RC1778	Helter Skelter™	(11T, Quad)	\$80
RC1779	Speed Metal™	(12T, Trpl)	\$80
RC1780	Flash Point™	(13T, Sngl)	\$80
RC1781	Buzz Saw™	(14T, Dbl)	\$80
RC1782	Armageddon™	(15T, Quad)	\$80
RC1783	The Classic™	(16T, Quint)	\$80
RC1708	Joel Magic Johnson®	(17T, Trpl)	\$80

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READERS' RIDES

"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 251 Danbury Rd., Wilton, CT 06897. If the Ayatollah of Radio Controlla chooses your photo, you'll receive a one-year subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the fourth annual "Reader's Ride of the Year Contest." Write your address and phone number on your letter and on the back of each photo you send, in case we need to contact you.



COLOSSAL CLOD

This unique-looking, monstrous Clod Buster comes from Chris Thomas of Morganfield, KY. Chris scrapped the original chassis in favor of his own light, custom-built chassis, and he added a multi-link suspension system and four long Associated rear shocks. A Novak 610 RV powers this truck while two Monster Mash motors get it up and on its way. Chris controls it with a Futaba Magnum Junior radio and a Futaba 9302 servo. He says that the truck is very fast and handles well.

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JOURNEY TO JAPAN

These are Edwin Lee's specially imported 1/10-scale F1 Kyosho cars. That's right—specially imported. Apparently, Edwin, who lives in Ridgefield, NJ, knows what's going on in R/C in Japan; when he heard about the Kyosho Canon Williams Renault FW14, he couldn't wait for Great Planes to distribute it, so he bought it direct. (The McLaren Honda body in the background is from Japan as well.) Its

components include a Tekin TSC408 speed controller with a Tekin mini-receiver, a Futaba Sport 2PB, New Wave and Trinity Team cells (1400mAh SCRs), Kyosho stock foam tires and a 23T Club Motor from Zeppelin Hobbies in Riverdale, NJ.



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NASTY NSX

Vincent Ip, of Savannah, GA, runs a Yokomo Acura NSX that's not only stunning, but is a real street screamer as well. It's equipped with a Tekin 411P ESC, a Trinity Triad 11-turn motor and a pushed, 1700mAh, 7-cell battery pack. Vincent painted the body an always-fashionable bright red.



WHERE ARE CHEECH AND CHONG?

After reading Mike Ogle's awe-inspiring article, "How To Paint Murals" (August '92), Jason Jordan of Bloomfield, NJ, tricked-out his Traxxas Fiero with a custom-painted Lunch Box body. Jason meticulously sprayed on the sides and the fading sky with cans of Pactra paint; he doesn't have an airbrush. Jason controls his vehicle with a Futaba Attack Sport and powers it with a Joel Johnson stock motor and a Traxxas XL-2 speed controller. What we want to know is: what's all that smoke coming out of the windows?

.....

THREE'S COMPANY

Scot Severn of Unionville, MI, sent along this photo of his prized collection—a JR-X2, a Clod Buster and a Tamiya Astute. The JR-X2 is powered by a Speedworks 427 stock motor with help from a Futaba speed controller. The Clod has been upgraded with ball bearings, Monster Mash motors and 4400mAh batteries, and it's topped off with a USA-1 body. The Astute is mostly stock, except for 2-inch rims that are equipped with Team Losi tires. All three vehicles are controlled by Futaba Magnum Junior radios.



.....



PHILLY FLAMER

Gene Watts of Philadelphia, PA, owns this hot RC10T. For optimum control, Gene outfitted it with a Futaba Magnum radio, a Tekin 411G speed controller and a Tekin receiver. Gene added a Team Losi Jr.'s Choice motor to ensure awesome truck action!

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PETTY PAIR

Alex Hillman of Grand Rapids, MI, is a dyed-in-the-wool Richard Petty fan, so he decided to paint some commemorative bodies in honor of the King's final year of racing. The JRX-Pro on the left has a Slot Machine motor, Novak electronics and a Futaba servo.

The Bolink Eliminator 10 on the right has a modified front end that allows adjustable camber and caster, an LTO-style chassis, Kyosho Gold Shocks and an 11-turn Trinity Triad motor. Both cars are topped with matching blue-and-red number 43 STP bodies.

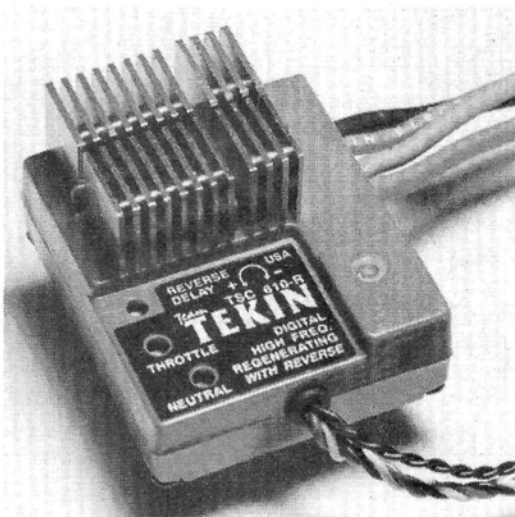


SCOPING OUT

TEKIN 610R

by JOHN RIST

TEKIN'S* NEWEST racing speed controllers, the 411G and the 410K, swept the racing world with a vengeance and set new standards for high-frequency speed controllers. Tekin must have used what it learned when developing these controllers to make its new reversing speed controller. This should make the TSC 610R the logical choice if you want all the advantages of a high-frequency electronic speed controller (ESC) and the fun of having reverse.



A quick look reveals that the 610R is a reversing speed controller with an adjustable reverse delay, so it also has brakes. It has the following features:

- 12 FETs (eight for forward, four for reverse);
- high-frequency motor control;
- three trim potentiometers (neutral, full speed and reverse delay);
- built-in, pulse-checking LED;
- BEC circuitry;
- installed Tamiya-style battery connectors and bullet motor connectors;
- Tekin's universal receiver connector system.

It comes with an instruction book, heat sinks, plugs (to keep dirt out of the adjustment holes), an adjustment screwdriver,

servo-mounting tape, tie-wraps and Tekin decals.

I took the controller out of its case to see what its insides look like. Its construction looks extremely good. Most of the parts are surface-mounted. The copper that's required to handle the motor current is massive and covered with heavy solder to further enhance its current-carrying capacity. The wires that go to the motor and battery are large and color-coded—pink and blue for the motor, red and black for the battery. The case has a tongue-and-groove seal that should lock out dirt. The only thing that doesn't make sense is that the case has five holes, but only four wires are used. This leaves a hole through which dirt can enter the case! There's a place on the printed circuit board for a fifth heavy wire, and it *could* come out through this hole, but for the life of me, I don't know what the extra wire would be used for. Anyway, I simply covered the hole with tape to keep out dirt.

I've documented in this column that reversing ESCs have higher "on" resistances than forward-only-with-brake controllers (high "on" resistance reduces the battery voltage that passes through the controller and causes the FETs to become hot). But then, the point of using a reversing ESC isn't to go world-class racing, but rather to make your car work like a full-size one and, just simply, to have fun. Therefore, the questions that must be answered are: is the controller's resistance low enough to produce gear-jamming, mind-boggling performance? Is the unit rugged enough to survive a fair amount of abuse? Just how smooth is the throttle response of a high-frequency ESC? Having established that the 610R was crafted with Tekin's usual attention to

high quality, I headed to the "Scoping Out" lab to answer these tough questions.

VOLTAGE-DROP TEST

I hooked up the 610R and tested its resistance. With 12 amps of current flowing, the voltage drop along the length of the wire was 0.22 volt, which yields a resistance of 0.018 ohm. Two inches along the wire, the voltage drop was 0.14 volt—a resistance of 0.011 ohm.

This places the 610R at the top of the heap of reversing ESCs. I know of only one that has a lower "on" resistance—the Turbo Zeta. It's a monstrous unit that's intended for large pulling trucks and high-voltage boats, and it requires a second battery pack to operate the reverse function. Based on resistance alone, the 610R is a kickin' trick replacement for the mechanical speed controllers that come in most buggies.

Another interesting observation is that the 2-inch "on" resistance is almost twice as good as the end-to-end "on" resistance. Most of this can be contributed to the battery connectors and motor connectors. If you have the skill to replace the connectors, I've found that Litespeed* Super Connectors work extremely well. Just remember, if you reverse any of the connections, you'll probably wipe out the controller and void the warranty. I've also found that the real offender is the Tamiya-style battery connector. So if you replace *only* this connector, you won't have to worry about swapping the battery and motor wires. If you have any questions, I hope that there's a good hobby shop in your neighborhood where you can find help.

LET-IT-COOK TEST

Although it was low, the "on" resistance was still in the reversing ESC range—high enough to cause heating. To check this, I cranked the current up to 20 amps and let the controller run wide open with

(Continued on page 26)

"SCOPING OUT" LAB AND TESTS

THE LAB consists of:

- an oscilloscope
- a digital voltmeter
- a variable-load resistor bank
- a 6V 30A electricity supply
- a Pit Stop Radio servo/speed controller tester.

The oscilloscope is used to monitor the controller's output and to guarantee that it's fully on.

The digital voltmeter takes all the voltage-drop readings and verifies the reading on the current meter.

The resistor load bank consists of 40, 12-ohm, 5W power resistors that can be switched on and off one at a time to vary the load between 6 amps and 20 amps, but the standard 12 amps are usually used.

In series with the resistors is a 25A Simpson current meter and a 1-percent 0.01-ohm resistor. By measuring the voltage drop across this resistor, the current-meter's reading can be double-checked. Of course, the lab power supply provides the test current.

• **VOLTAGE-DROP TESTS.** These are the first tests. It's virtually impossible to read an ESC's resistance directly, so I measure the voltage drop across it with the resistor bank set up for 12 amps of current. I then calculate the controller's "on" resistance by dividing the measured voltage drop by 12 amps. I take the voltage reading twice: along the full length of the battery and motor wires (including connectors) and 2 inches along them. The first reading helps me to determine an ESC's "on" resistance as it comes from the factory, and the second gives a standard reading with which I compare ESCs.

• **LET-IT-COOK TEST.** I adjust the resistor bank to pass 20 amps of current, then I jam the throttle wide open and let the ESC pump the 20 amps.

• **DEAD-SHORT TEST.** With this test, I check whether the controller can survive the heavy current caused by a jammed gear or a fried motor. No one likes to have this kind of trouble and discover that his ESC has been destroyed, too.

TEKIN TSC 610R

DIMENSIONS:

Height (with heat sink installed) 1.13 inches
Width 1.75 inches
Length 1.96 inches
Weight (with wires and heat sink) 3 ounces

TUNING:

Access to controls Excellent
Ease of adjustment Good

PRICE:

Suggested price \$165
Warranty 120 days

ELECTRICAL:

(Manufacturer's specs)

Max voltage 10 cells

Min voltage 4 cells
Max current forward 200 amps
Max current reverse 100 amps
Resistance 0.008 ohm

TEST PARAMETERS:

Voltage 6 volts
Current 12 amps

TEST RESULTS:

Voltage drop to end of wires 0.22 volt
Voltage drop, 2 inches along wires . 0.14 volt
BEC voltage, 6-cell pack 4.99 volts
Resistance to end of wires* .. 0.018 ohm
Resistance, 2 inches along wires* 0.011 ohm

*Resistance=voltage drop/amps

COMMENTS:

Tired of mechanical speed controllers with their tangled mess of servos, resistors and rotary switches? Maybe it's time to look at the Tekin 610R. This is a reversing speed controller; this would usually mean it couldn't be used for racing, but Tekin has incorporated a reverse-delay adjustment that, when turned fully counterclockwise, dials-out reverse. This, coupled with its very low "on" resistance (for a reversing-style ESC) could make the 610R a hot, trick item for a backyard-burning buggy and a fairly good racing speed controller at your local stock-class, off-road track.

its heat sink in place, but with no cooling air. After 15 minutes, the 610R was still operating normally even though the heat sinks were hot to touch. The Tamiya-style battery connector was very hot, but the motor connectors were barely above room temperature.

DEAD-SHORT TEST

I placed a piece of monster wire across the motor leads, and the current jumped to 41 amps—the limit of my bench supply. I let the controller struggle along this way for one minute, after which it was smoking hot and the battery connector was so hot that it had started to soften. Yet, through all of this, the 610R never stopped pumping current. This controller appears tough enough to withstand abuse and misuse without going to the great speed-controller resting place in the sky.

SETTING UP

Tekin's instruction books are among the best in the industry. The 610R's 22-page-long, full-color book covers every aspect of the installation in great detail; even newcomers should be able to install this controller successfully. The only thing that could be a little confusing is getting forward and reverse straight. For most Futaba transmitters, the throttle-reversing switch must be in the reverse

mode. If everything is correct, the pink motor wire should go to the "+" motor terminal and the blue should go to the "-."

A good way to make sure that forward/reverse is correct is to dial-out reverse. To do this, turn the reverse-delay potentiometer (pot) fully counterclockwise. The car should go forward only and the brakes should be good. If the car runs forward with the trigger in the full brake position, you have to change the throttle-reversing switch on the transmitter. If the car goes backward when you apply forward trigger, reverse the motor wires.

ROAD TEST

I installed the 610R in my Kyosho Sideways. I use this car a lot to test ESCs because its larger-than-usual tires permit me to run it on almost any surface. I've equipped it with a Slot Machine stock motor and a 7-cell SCR pack, and it's geared high to go fast and to abuse the motor and speed controller.

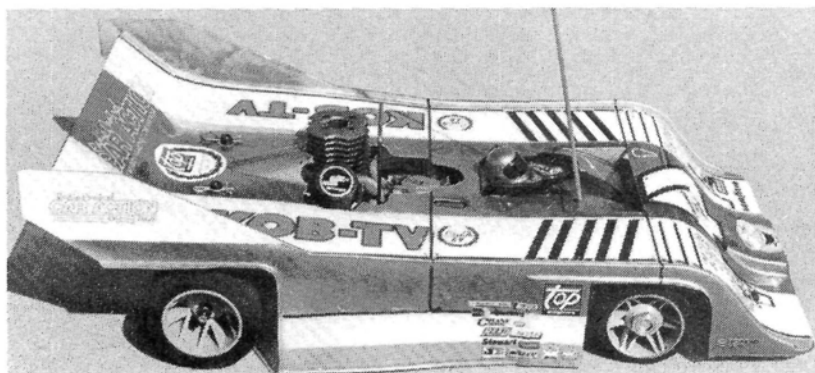
I set up my Futaba* Magnum JR according to the 610R's instructions. I started with zero reverse delay (this control was set to full clockwise). I then turned on the transmitter, plugged in the battery and turned on the speed controller. The car's rear wheels started to spin. I slowly ad-

(Continued on page 142)

NITRO NEWS

NO BODY'S PERFECT!

by JEFF BRONSTEIN



The Elfin's steeper front and rear spoilers provide excellent downforce at slower speeds, and that translates to needed traction. Its angles also produce a lot of drag, however, and that can slow the car on the straightaways.

WHAT IS IT that makes a great body? (Hey! Get your mind out of the gutter! We're talkin' R/C here!) The shape of a body can noticeably improve a car's performance. Aerodynamics has a profound effect on a race car's handling, especially with 1/8-scale gas cars that achieve incredible speeds. No body style is perfect for every track, so when you choose a body, you have to consider the track layout, your driving style and how you want your car to perform.

Two devices are commonly used on race cars to affect their aerodynamics: spoilers and wings. They increase downforce, and that results in considerably higher cornering speeds and improved acceleration and braking, but they also produce drag, and that can slow a car down on high-speed straights.

The difference between wings and spoilers is how they affect air as it passes over the car.

• **Wings.** A wing is usually mounted separately from the car's body, and is often supported by piano wire. A wing allows air to flow smoothly over both its upper and lower surfaces. Depending on their design and the angle at which they're mounted, wings can generate either lift or downforce by channeling and redirecting the air that surrounds their surfaces.

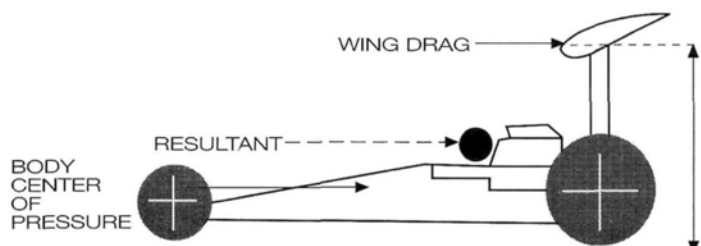
• **Spoilers.** A spoiler, on the other hand,

is installed directly on the body and is designed to channel air over its front surface only. As the name implies,

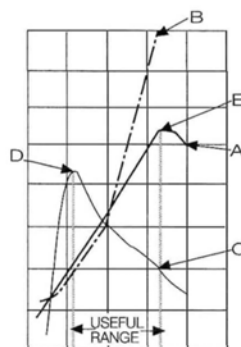
spoilers kill lift by "spoiling" the airflow

Airflow can have a positive or negative effect on a race car's performance. If air is caught under the chassis when the car is going fast, it can lift the car off the road. In some cases, this lift will be so severe that the car's steering characteristics change radically as it accelerates—understeering at low speeds and oversteering at high speeds. A spoiler on the nose of a car disrupts the airflow so that less passes under the chassis to lift it, and it increases front-tire traction, so there's less understeering. A front spoiler should be as close to the ground as possible to deflect as much air as possible. Ride height is especially critical; the lower the car's ride height, the less air will be trapped under it, and chassis lift will be

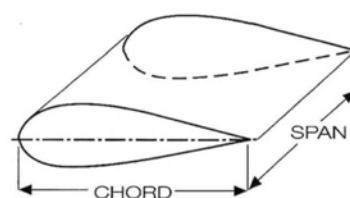
(Continued on page 34)



Drag force on the wing changes the resultant total vehicle center of pressure by raising it, thereby unloading the front wheels.



This graph shows how wing downforce "A" and drag "B" vary with angle of attack. Notice there is also a curve "C" showing how downforce-to-drag ratio varies. This curve is a measure of wing efficiency. Most racing cars operate their wings somewhere between maximum wing efficiency "D" and maximum downforce "E." Don't ever go outside this range—it will hurt overall performance and handling.

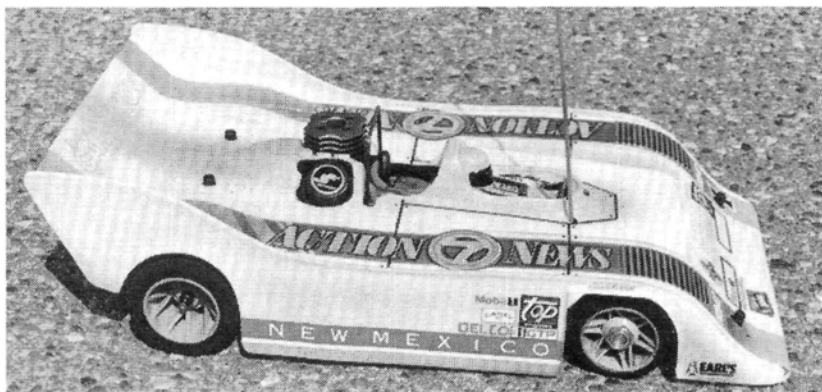


ASPECT RATIO = $\frac{\text{SPAN}}{\text{CHORD}}$

WING AREA = $\text{SPAN} \times \text{CHORD}$

Here are some of the terms used to describe size of a wing. The larger the aspect ratio, the greater the wing efficiency. The larger the wing area the greater the downforce and drag. Wing efficiency is the ratio of downforce to drag.

(Continued from page 30)



The Lola body has a smoother, more subtly shaped body that cuts through the wind and allows the car to reach a higher top speed. Its clean lines generate less downforce than the Elfin's steep ones. Use the Lola on fast tracks where speed is important.

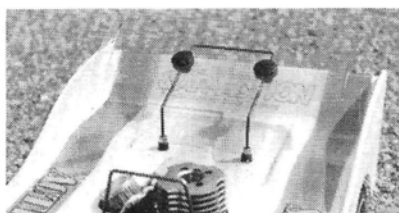
less. Nose spoilers will almost always improve high-speed stability and handling, so you'll find them in all forms of racing.

A rear spoiler deflects air upward, and this increases downforce at the rear and reduces oversteering. Rear spoilers are generally much larger than front spoilers and they channel much more air. Consequently, they create more drag. Drag is the resistance encountered by air as it moves over an object; this resistance slows a car down. On a straightaway, spoilers and wings may actually hinder a car's ability to reach top speed.

Aerodynamic devices (car bodies, wings, and spoilers) exert little downforce at low speeds, but downforce increases with the square of the car's speed. In other words, if you double the car's speed, the body, wing and spoilers generate four times as much downforce. A good racing body must have good aerodynamic downforce and as little as drag possible.

CAN-AM VERSUS GTP

Although some 1/10-scale on-road gas racers have replaced their older Can-Am



A wing is the most effective way to generate downforce.

bodies with new GTP styles, most still use open-cockpit designs like the Associated Elfin and the Parma VDS Lola T530. Some GTP cars have virtually the same aerodynamic efficiency as Can-Ams—in some cases, even better—but the flat upper deck of the Can-Am allows more cooling airflow to the engine. Breaking old habits can be difficult. At this year's 1/8-Scale ROAR Nationals in

Albuquerque, NM, nearly every racer used either a Lola or an Elfin body. With his stylish Porsche GTP body, Thomas Ramundo was the lone exception in the 4WD A-Main.

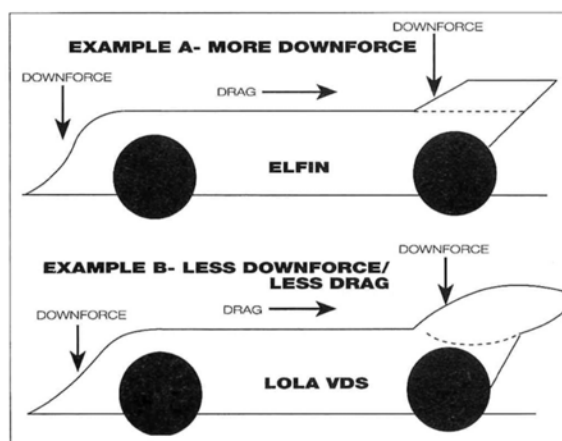
ELFIN VERSUS LOLA

Both the Elfin and the Lola have excellent reputations as superb racing bodies, but they offer different advantages. The Elfin has

steeper front and rear spoilers to provide more downforce at lower speeds, in sharp corners and on short straights. The Lola has more subtle lines and a smoother profile that allow it to slip through the wind on long back straights and fast, sweeping corners. Generally, the Elfin is preferred on tight, short tracks where steering is important, and the Lola is favored on fast, open tracks for speed.

WING 101

A wing might be the most useful addition to any race car. It's the most efficient way to create downforce. The size and angle of the wing determines the amount of downforce it produces. The width is called the "span," and the length is called the "chord." If you divide the span by the chord, you get the aspect ratio—a measure of the wing's efficiency. The higher the aspect ratio, the more efficient the wing. Span multiplied by chord is the area of the wing, and is what determines total downforce. The larger the area, the stronger the downforce.

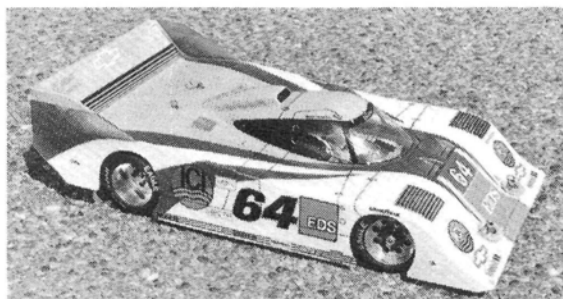


Downforce also depends on the wing's angle of attack, i.e., its tilt. But drag increases with the angle of attack. If the wing is mounted on an angle that's too extreme, it stalls and no longer creates downforce. There's a huge amount of drag on a stalled wing, so take care not to mount a wing at too sharp an angle.

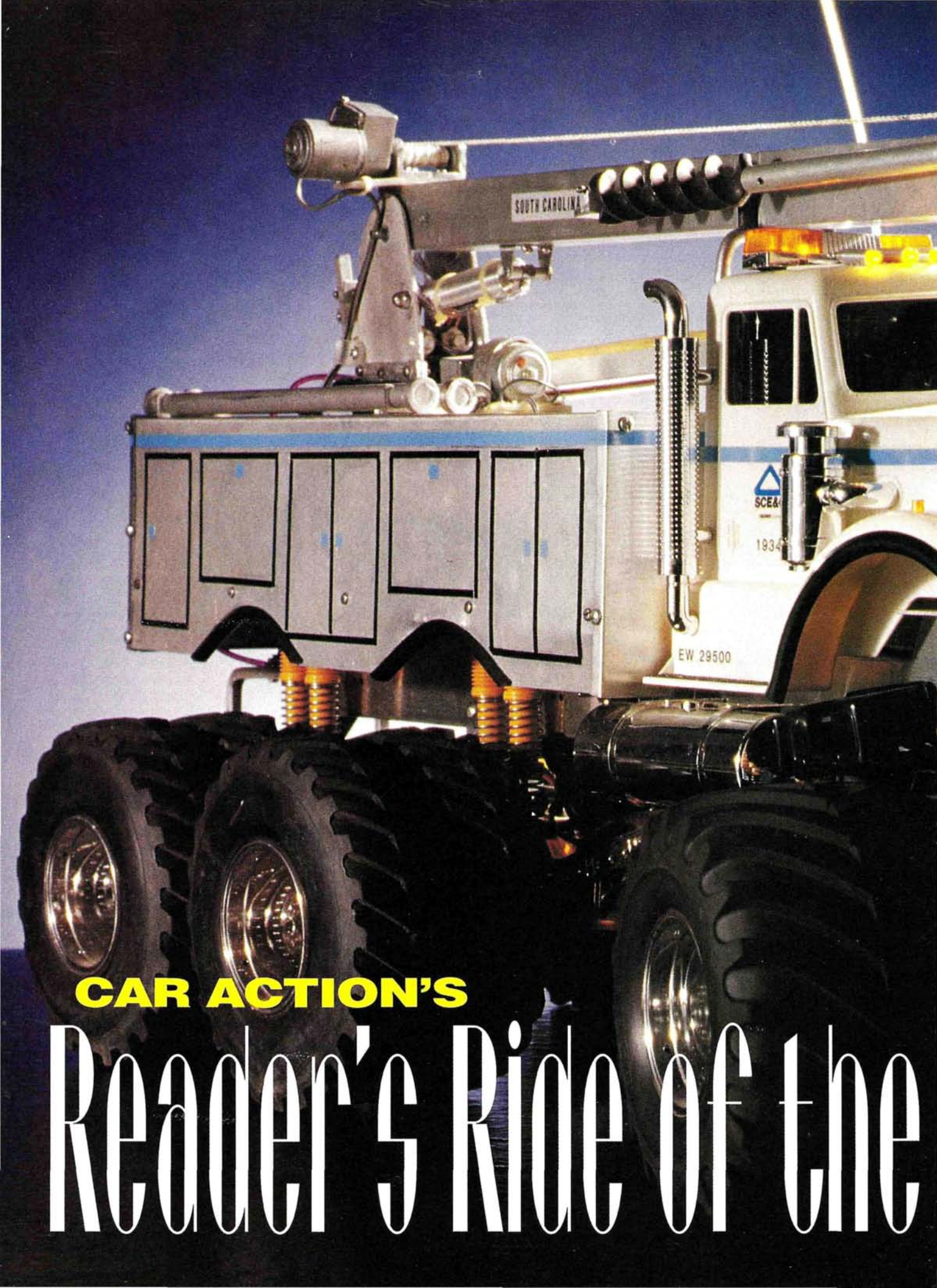
Because there's high pressure on top of a wing and low pressure under it, air tends to "spill" over its tips. This "tip loss" reduces aerodynamic efficiency. End fences (bent-up tips) keep the air on top of the wing and reduce tip loss.

Spoilers can also "lose" air, so most

(Continued on page 144)



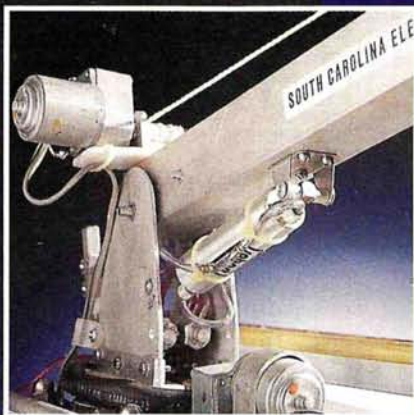
Many racers of 1/8-scale cars have removed their cars' wings entirely in favor of the direct body mounting system. Downforce from the rear spoiler travels directly to the tires and allows the suspension to work more freely. Removing the wing also reduces drag.



CAR ACTION'S

Reader's Ride of the

The custom-made extendible boom is made of two pieces of square aluminum tube and is controlled by compressed air. A working winch and drill are on the end of the boom.



by JOHN HOWELL

WELCOME to the fourth annual "Reader's Ride of the Year"! More and more of you have been sending us photos of your unique creations that have quite often surprised us and sometimes downright astounded us. Well, 1992 was no exception, and one of the most impressive entries was Fred Horton's awesome Bull Head 6x6 line truck—a vehicle used to install

utility poles and anchors for power lines.

Why a line truck? The fact that Fred has been an employee of the South Carolina Electric & Gas Co. for the past 33 years might have had something to do with it. When he saw a display at HMW Hobby Shop that featured a cement mixer built with a Sassy Chassis* 6x6 chassis and a Tamiya* Bull Head kit, he realized that he could use the same equipment to build a line truck.



A 6x6 Sassy Chassis chassis rests beneath the custom-built line-truck body. A stock Tamiya Bull Head speed controller handles the power.

Layin' the line

GETTING ON-LINE

After reading Chris Chianelli's review of the Bull Head in the April '91 issue of *Car Action*, Fred bought the kit, a Futaba* radio and some miscellaneous parts. Frank Werringham, a former partner in HMW Hobby Shop and a frequent participant in events at the Sidewinder Race Track, gave Fred a lot of technical advice.

Fred ordered the dual wheels, the third axle assembly, the special 6x6 aluminum chassis, the RAm light kits and the miscellaneous small parts from Sassy Chassis.

Fred modeled his line truck after a full-scale model. A bit from an old auger drill completed the kit.



PHOTOS BY WALTER SIDAS

car

CAR ACTION'S READERS' RIDE OF THE YEAR

"It was the first monster truck I'd ever built," writes Fred, "and it took me about four nights, or roughly 16 hours, to complete the chassis. I was amazed at the detail and engineering that went into the Bull Head kit."

After assembling the special 6x6 rolling chassis, Fred started to work on the cab and the body. First, he cut off the tank and the rear portion of the cab with a soldering-gun cutting blade so that the body would fit closely to the cab the way it does on a full-size line truck. Then, he patched the back of the cab with a piece of aluminum, using the kit's body-mounting posts and a section of aluminum angle to secure the body to the chassis.

He "locked down" the two rear axles so that they'd no longer steer and, for strength, he installed solid axle shafts. Since Fred didn't want to race or pull with the truck, he decided not to replace the Bull Head's standard gears and motors.

The standard speed controller worked well until he tried to pull a light load and burned up the resistor. Since he wanted slower speed with more power, he split the battery packs, and now his truck runs on three batteries (3.6V) wired in parallel.

HI-ZOOT GADGETS

Fred used an old cookie sheet to make the floor of the body, and he formed the side bins out of two pieces of 2-inch angle aluminum, using a vise, two C-clamps, a piece of oak and a hammer. To make the extendible boom, he inserted a 1x1-inch-square aluminum tube into a slightly larger tube. He bought the tip-mounted pulley, the hood scoop and about 200 stainless-steel screws, bolts, nuts and washers at a marine hardware store.

The winch was made of two pieces of aluminum angle drilled to accept two Dynamite* 1/4-inch bearings. The winch shaft consists of a piece of round bar aluminum turned down on a lathe to fit the 1/4-inch bearings, and the winch motor is a gear-reduction motor ordered from Edmund Scientific Supply. Fred used a small piece of sheet aluminum and 1/4-inch-square stock aluminum to fashion the military-type pintle hitch.

He added a RAM flashing-light kit to the yellow roof-mounted light, which was taken from an old Nylint wrecker. He also installed RAM clearance lights and a switch on the back of the cab to control the hazard lights/turn signal.

The SCANA/SCE&G decals from Fred's company look great—so do the blue auto-body tape used for the stripe and the door outlines and the black door-edge guard molding used for the fender extension/trim.

Air cylinders control the boom lift and the boom extension. The



These switches on the rear of the truck control the miscellaneous accessories. The two switches on the right control the turret rotation and the boom extension. The four switches on the left control the operation of the headlights, the flashing lights on the roof, the turn signals and the hazard lights. A master switch regulates the power supply to the lights.

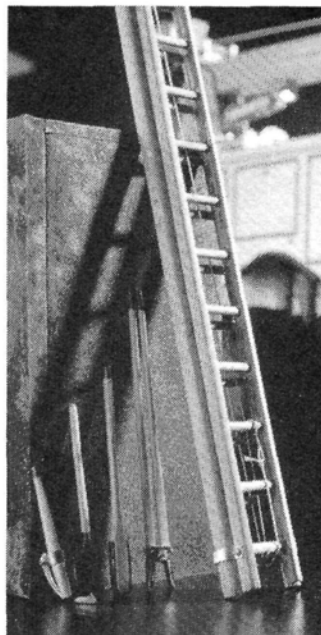
valves at the base of the boom turret control the compressed air that's stored in the four air tanks (two on each of the body's side compartments). Fred installed an air valve at the rear of the truck so that he could pump air into the tanks with a bicycle pump. Robart Mfg.* supplied the valves, the fittings and the tanks. The valve springs return to neutral when released, and the boom can be extended 4 inches by using an air cylinder and a cable-pulley spring system.

A working extension ladder and a rack on which to mount it add to the realism. Russel Woods, a fellow SCE&G employee, made a scale shovel, a tamp (to pack down the dirt around the poles), a cant hook (used to turn or position a pole) and a post-hole digger.

The 120 hours and \$1,400 that Fred has invested in this project have yielded spectacular results. The judges at a hobby show in Charleston must have thought so, too, since the line truck won a first-place trophy there. Fred even used the truck to "present" a set of golf clubs to a retiring coworker, while 200 people watched.

"My next project is going to be an aerial basket or a bucket truck that uses the same running gear and possibly a new Bull Head kit," says Fred. "At some point, I'd like to build a wrecker with an aluminum body. I also owe a debt of gratitude to Larry Mattox who encouraged me to enter the contest." (Larry won "Car of the Year" in January 1990.)

So there you have it, folks. This year's award—and a \$500 check!—goes to Fred Horton and his amazing 6x6 truck. We can't wait to see who will top this one!



One of Fred's co-workers, Russel Woods, made an extension ladder, a tamp, a shovel, a cant hook and a post-hole digger.

**Here are the addresses of the companies mentioned in this article:*

Sassy Chassis, 906 Ridgewood Dr., Cary, IL 60013.

Tamiya America Inc., 101 Columbia, Aliso Viejo, CA 92656.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Dynamite; distributed by Horizon Hobby Distributors, P.O. Box 6029, Champaign, IL 61821.

Robart Manufacturing, P.O. Box 1247, St. Charles, IL 60174. ■

TRAXXAS

BLUE EAGLE LS

N.O.R.R.C.A. NATIONAL CHAMPION

The Traxxas Blue Eagle LS Top qualified and went on to win first, second, and third in the Truck class at the N.O.R.R.C.A. 1992 Dirt Oval Nationals. Two of the Traxxas trucks turned in the only 30 lap runs. Now that's fast! The Blue Eagle LS has the low 2.72 final drive ratio which allows the hottest and fastest motors to be used. No other truck has it!

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R.O.A.R. & N.O.R.C.C.A. NATIONAL CHAMPION

TRX-1

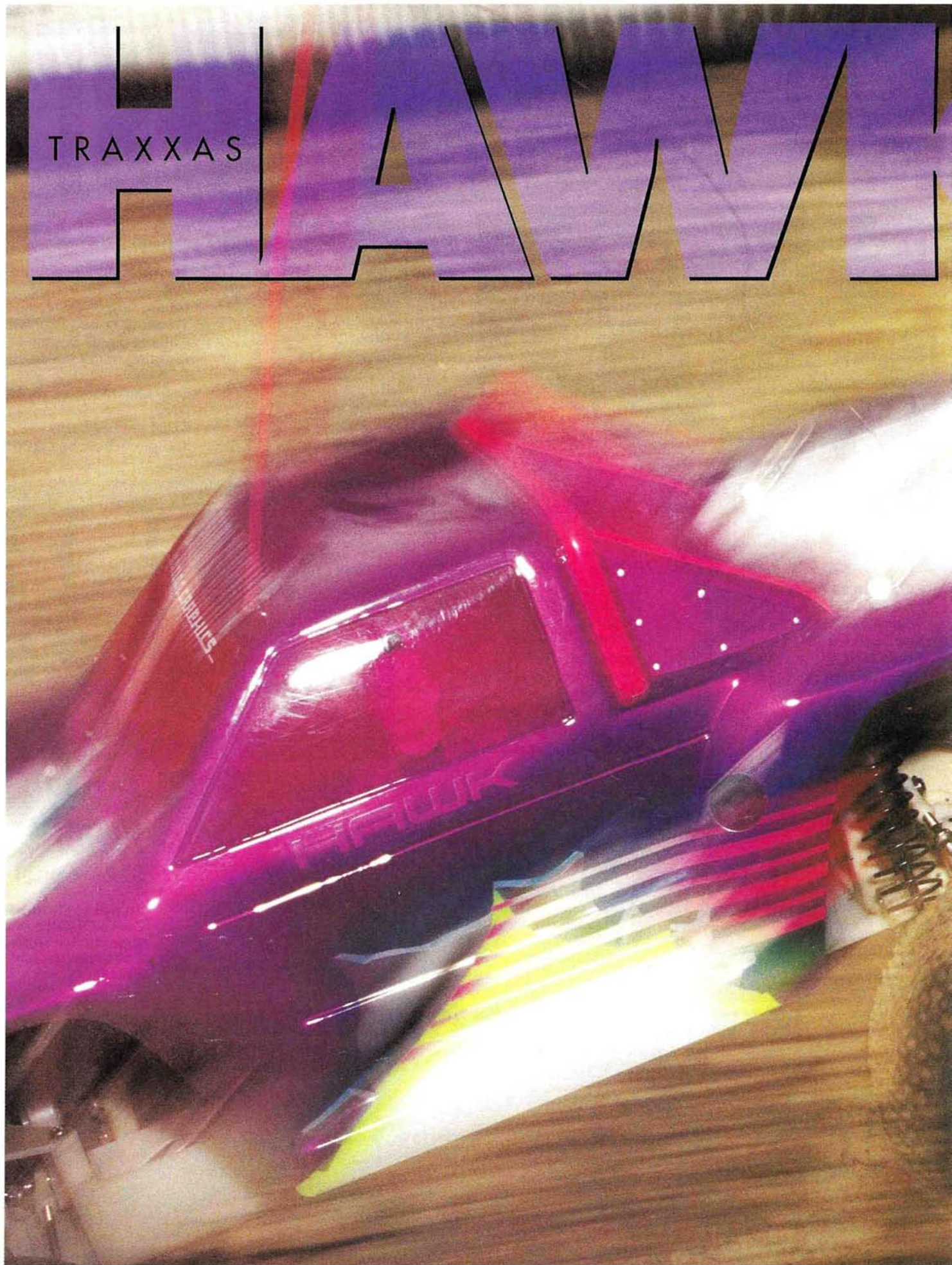
R.O.A.R. NATIONAL CHAMPION

The Traxxas TRX-1 swept the Stock class at the R.O.A.R. National Championships by winning 1st in the A through E mains. Racing against equally-powered competitors the TRX-1's superior transmission and suspension gave it the advantage necessary to win. The TRX-1 also holds current National Championships in France, Australia, New Zealand; and also won the 2-WD portion of the Reedy Race of Champions in Great Britain.

TRX-1 FEATURES: 100% GRAPHITE CHASSIS WITH 30-DEGREE KICK/ HARD-ANODIZED, TEFLON-COATED T-6 ALUMINUM OIL DAMPERS/ EXTERNALLY ADJUSTED DUAL BALL BEARING DIFFERENTIAL/ SLIPPER CLUTCH/ PRO-TRAX TIRES/ BELLCRANK STEERING/ TURNBUCKLES/ NYLON AND T-6 CONSTRUCTION/ AERODYNAMIC BODY/ COMPLETE TUNING AND ADJUSTMENT CAPABILITIES.



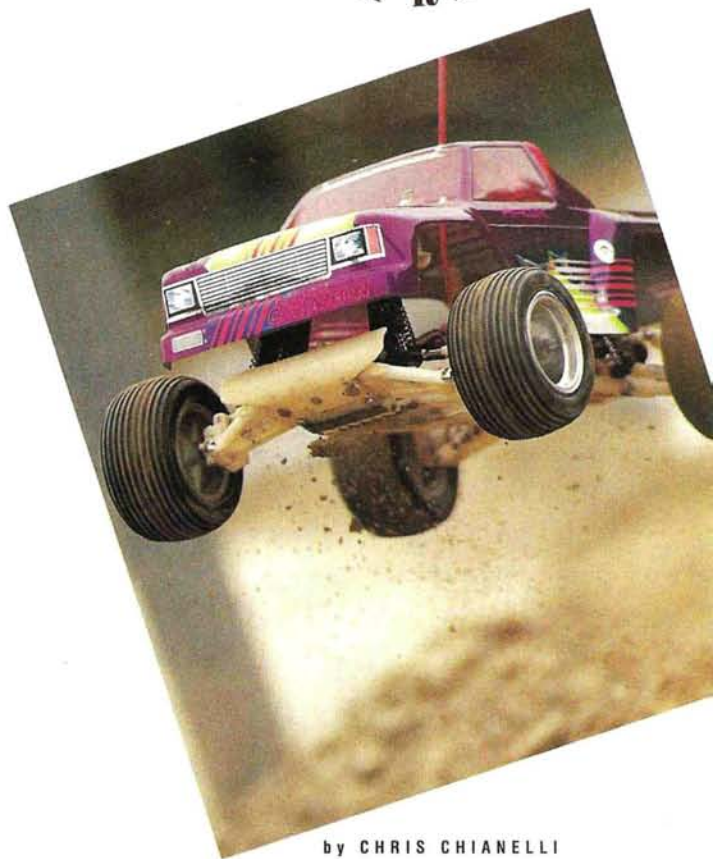
TRAXXAS



X2



PHOTOS BY JOHN HOWELL



by CHRIS CHIANELLI

THERE WERE THOSE who laughed when I reviewed the very first Traxxas Eagle, because I said that it and

Traxxas, which was previously only an entry-level company, would make their mark on the race-truck scene. Well, after several Eagle upgrades and

Quick study

many impressive wins (like TQ'ing the ROAR Nats in Georgia, taking first, second and

third at the NORRCA Dirt Ovals and stomping the competition in England at the Reedy Invitational) Traxxas has forever shed its old image for a respected racing one, and I've had the last laugh! It's a burden being right so often, but, somehow, I shall carry on.

RACE-BRED

Traxxas has taken what they've learned in their years of racing and applied it to the original Hawk to create the new Hawk 2. Actually, the new version shares very little with the old Hawk in terms of important performance features. The basic tub chassis, rear suspension arms, rear body posts and front bumper are carryovers, but there isn't much more than that. The Hawk 2's improvements include taller fiberglass shock towers, long-throw oil-filled shocks, new front suspension and a suspension geometry that gives the 2 vastly improved suspension travel and damping. Gone is the old Sledge Hammer transmission; it has been replaced with an Eagle LS-type tranny that has a planetary gear diff; here again, a vast improvement. The old "windows" in the front of the chassis through which the steering rods passed have been removed. (This feature greatly limited the original Hawk's front suspension travel.) With this drawback eliminated, the Hawk 2's front suspension can take full advantage of any shock you choose.

CHOICES

Currently, the Hawk 2 is offered in three versions: a kit; a ready-to-run with a mechanical speed controller;



**"It's the perfect truck to
hone your skills with, and
here's the best part: the
Hawk 2 can be upgraded to
a full-blown Eagle LS."**

and a ready-to-run with a reversible ESC. (Both ready-to-run versions come with a pistol-grip radio.) The ready-to-run versions are great for those who want to buy a truck on Friday evening, immediately start honing their race skills, and enter the Saturday-morning race at the local track. I chose the ready-to-run with the ESC. No, not because I'm lazy, but, would you believe, because I've learned the value of that most precious commodity—time!

Like all Traxxas products all the way back to the entry-level Traxxas Cat, the Hawk 2 is made mostly of a very rugged, high-nylon-content plastic composite. The new tranny utilizes 48-pitch gears and has both ball bearings and Oilite bronze bushings. The wheels also are supported by Oilite bronze bushings.

PERFORMANCE

With its greater suspension travel, its superior shocks (they're made of some plastic/nylon composite, but they still offer smooth damping) and its new tranny, the 2 is much more competitive than the original. The 2 handles jumps and moguls very well, and those new shocks keep it from losing its cool, even in ragged conditions.



SPECIFICATIONS

Manufacturer Traxxas
Type Racing truck
Scale 1/10 scale
Retail prices \$390 (RTR with ESC)
\$310 (RTR with mechanical speed controller)
\$190 (kit with mechanical speed controller)

DIMENSIONS:

Overall length 15.75 inches
Width 12 inches
Wheelbase 8.5 inches
Front track 10 inches
Rear track 10.5 inches

WEIGHT:

Gross
(with battery) 4 pounds,
2.3 ounces

BODY:

Type Pickup truck
Material Polycarbonate

CHASSIS:

Type Tub
Material ABS resin/nylon

DRIVE TRAIN:

Primary Spur/pinion
Transmission Gear
Differential Planetary gear
Bearings/bushings Ball bearings/
bronze bushings

SUSPENSION:

Type (f/r) A-arm with
adjustable upper link
Damping(f/r) Oil-filled,
coil-over shocks

WHEELS:

Type (f/r) One piece
Dimensions
(DxW) (f/r) 2.2x1.875
inches

TIRES:

Front/rear Pin-spikes

ELECTRICS:

Motor Mabuchi 540
Battery 6-cell flat*
Speed controller Traxxas XL-1

OPTIONS TESTED

Traxxas XL-2 electronic speed controller

COMMENTS

The Hawk 2 is a vast improvement on the old Hawk in terms of performance. The ready-to-run Hawk 2 is perfect for beginners who want to investigate the racing scene in short order. With a few upgrades, the Hawk 2 has great potential to be a serious modified-class contender.

*not included

HAWK 2

During full-on acceleration the 2 exhibits a predictable amount of understeer, yet it can snap around hairpins when the throttle is backed off. This was accomplished with far greater success after I replaced the stock XL-1 ESC (which only handles stock winds,

The Traxxas pistol-grip transmitter features throttle and steering trim at left, and servo reversing. Very basic, but very functional.

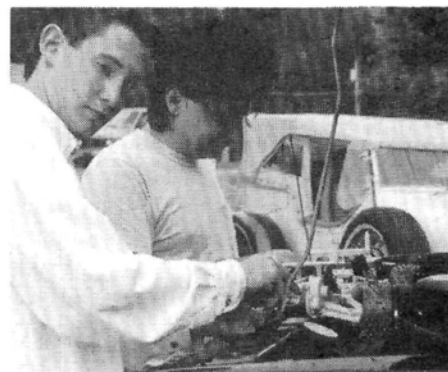
sports fans) with a Traxxas XL-2 unit that has good electronic braking characteristics.

Although the 2's steering was still a little "twitchier" around center than I like it, it

was far better than that of the old Hawk. This is probably because the 2's rear wheels have 4 more degrees of toe-in. I was able to get the 2's steering very close to my liking with 2 more degrees of toe-in on the front wheels. If I had had more time to work with the truck, I might have been able to fix it just right with a few more minor adjustments. But, of course, our Howdy-Doody-head yuppie executive editor kept annoying me about the deadlines.

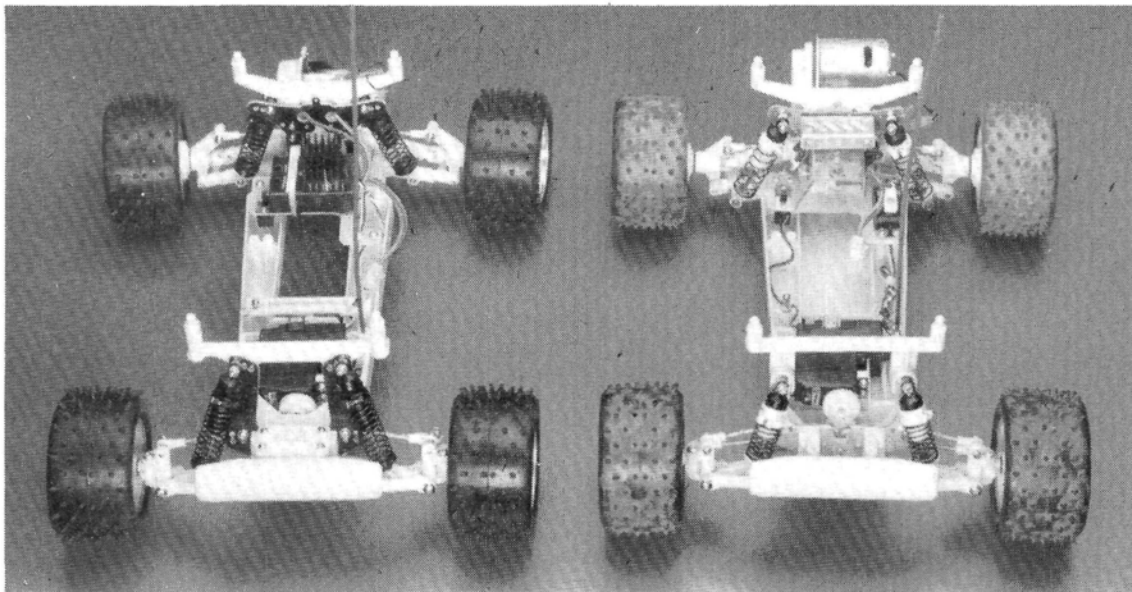
Anyway, don't get the impression you can win the Nationals with a Hawk 2; you can't. You can, however, do very respectably in the stock class at the local track. It's the perfect truck to hone your skills with, and here's the best part: the Hawk 2 can be upgraded to a full-blown Eagle LS.

As I've mentioned, the Hawk 2 can be

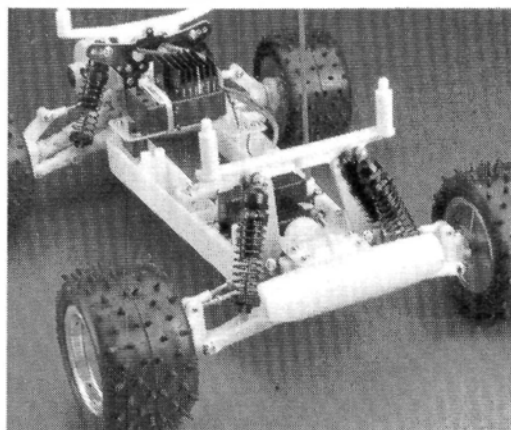
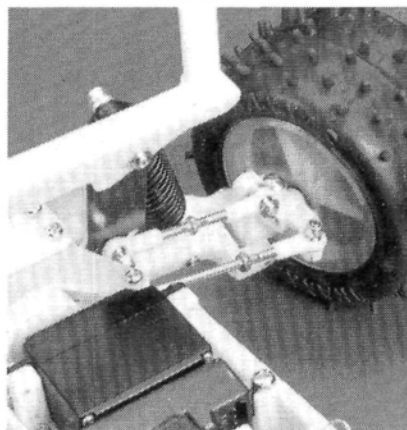
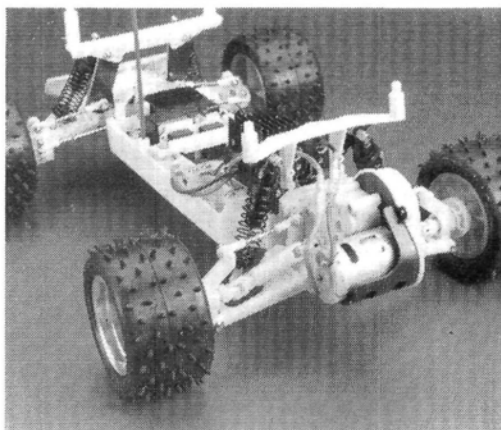


John "Nurse Doogie" Howell assists yours truly (the ugly one), Dr. Chianelli.

quite competitive on the local level as is, but the time might come when you want to make the move to longer LS suspension arms and a longer LS wheelbase. Yes, the Eagle LS graphite chassis can be bolted directly to all the Hawk parts—but it's graphite, which equals expensive. All other upgrade parts, however, including the arms, are very affordable. An after-market company would



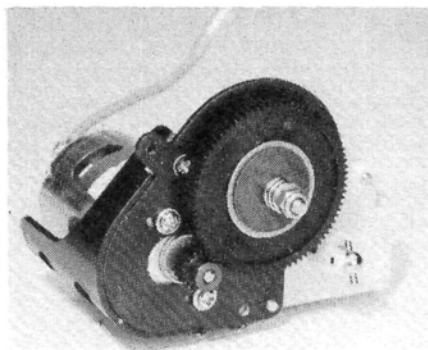
The Hawk 2 (left) and the old Hawk (right). The taller shock towers and new black shocks on the Hawk 2 are a couple of the reasons why it handles better. The 2's motor is low and out of sight in this photo because the new LS transmission has a lower mounting position. The old Sledge Hammer tranny held the motor very high—a safe place for Heavy Metal truck bashing, but not for racing. Note the 4 degrees of toe-in on the rear wheel for better straight-line tracking.



Above left: the right stuff. Adjustable turnbuckle upper links, telescopic half-shafts, a metal rear motor guard and an 84-tooth, 48-pitch spur gear with an adjustable slipper clutch are hiding in the drive housing that's mounted on the right side of the LS tranny. Above center: the redesigned front chassis allows far greater suspension travel. The fiberglass plate at the front eliminates the restrictive "window" through which the steering rod passed. Above right: this is how the ready-to-run Hawk 2 comes out of the box. The receiver is firmly mounted just aft of the steering servo. One ready-to-run version comes with the XL-1 ESC (shown) and the other comes with a mechanical speed controller for the more budget-conscious. You could put your savings toward a forward-only unit with good brakes, if racing is in your future.

do very well to make a fiberglass or aluminum-tub chassis for this truck to give it the wheelbase of the Eagle LS while keeping the price down. Rumor has it that Traxxas is working on one, but I can't get a straight answer from those Texans.

This truck really deserves a close look from the after-market people. In my opinion, creative ways to produce inexpensive hop-up parts for a product like this one would benefit the hobby. It would really be great to see an aluminum tub for this



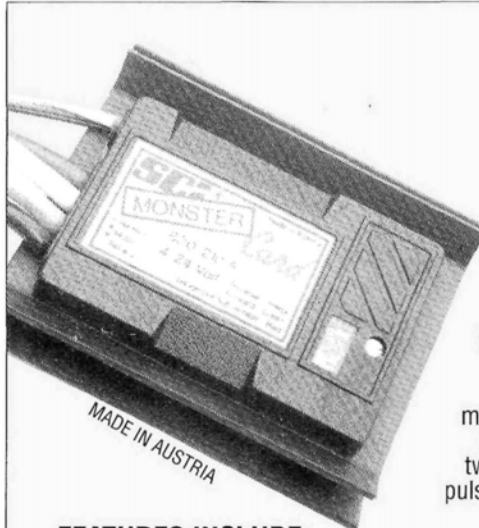
The Hawk 2's primary drive features 48-pitch gears and an adjustable slipper clutch.

truck, because who needs graphite anyway? Not you, that's for sure! The Associated and Losi teams certainly seem to be doing quite well without it! Associated still uses the aluminum tub and Team Losi drivers have all gone to high-pressure, molded-plastic composite chassis. Enough said, OK? I don't want any more letters from whining, crybaby morons telling me, "I need graphite to win! WAAAAHHHHHHHH!"

I know I've already told you that the best part of the 2 is its "upgradeability," but, depending on how full your piggy bank is, the best part might be its price. You can probably find the ready-to-run Hawk with the ESC and the radio for less than \$200; the full kit, for about \$100. The ready-to-run Hawk with the mechanical speed controller comes in at about \$160 to \$170, and this may be the most attractive to those of you who want to buy a more competitive, forward-only ESC that has good braking.

With this one purchase, you get a truck that you can instantly start to practice with. And you can gradually upgrade it into an all-out race truck that you'll feel confident and proud with at any track or race—even the Worlds. Remember, I'm right 97 percent of the time.

**Here's the address of the company that's featured in this article:*
Traxxas Corp., 12150 Shiloh Rd. #120, Dallas, TX 75228.



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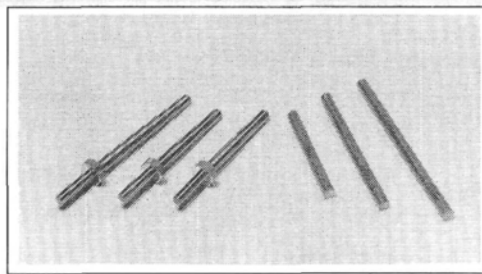
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Ivan "Ironman" Stewart RC10T Replica

PHOTOS BY DEBRA ACKER

I DECIDED to model an R/C truck after the full-size one driven by off-road champion Ivan "Ironman" Stewart. With more stadium wins than any other driver, it's no wonder that Ivan can't find room to display all of his trophies.

BUILDING THE BEAST

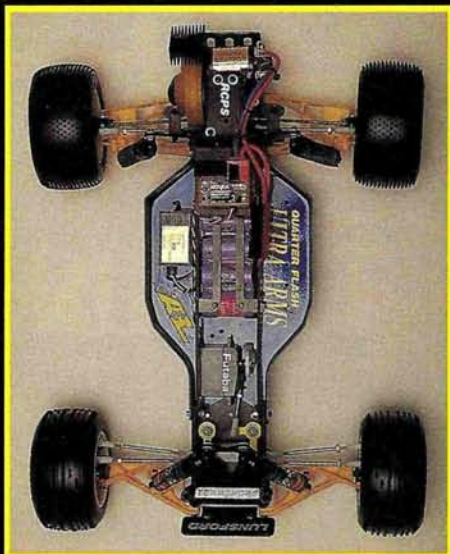
The RC10T's aluminum tub chassis closely resembles Stewart's aluminum-frame desert racer. To give my truck character, I used Associated's* new, fluorescent-blue chassis rather than the kit's black-anodized tub. You can dye many of the white nylon suspension and chassis parts with Rit dye or Litespeed's* Dylan. An A&L* chassis-stiffening kit makes the chassis more rigid and provides a convenient way to hold the batteries.

With its super light, oversize A-arms and new, narrow, one-

piece front bulkhead, the RC10T's suspension is a winner. Although it can take plenty of punishment, you can improve it even further by replacing the stock A-arms with Ultra Arms from Quarter Flash*.

Quarter Flash adds an $\frac{1}{8} \times \frac{1}{4}$ -inch open-faced bearing to each pivot point of stock Associated arms. This allows the truck's suspension to move freely. The stock hinge-pin holes have been enlarged so that only the ball bearings touch the Lunsford* titanium hinge pins.

RCPS* titanium kingpins and turnbuckles are connected to Robinson* titanium ball ends through stock Associated plastic rod ends. RCPS retaining rings keep the suspension components tight and secure. These rings are less likely to come off than conventional E-clips, but you'll need a special pair of pliers to install them.



To enhance the truck's appearance, I replaced the stock black tub chassis with Associated's new, fluorescent-blue tub.

Build a mini Baja blaster

by CHRIS ACKER

SHOCKING SUSPENSION
The kit's shock absorbers have hard-anodized bodies and internally loaded Teflon seals. This design gives the shocks more travel and less friction. I used Associated 30WT silicone oil on all four corners, new Associated truck springs and the stock Stealth transmission. A Robinson 48-pitch, 15-tooth titanium pinion gear drives an 87-tooth spur gear that's covered by an RPM® dust cover.

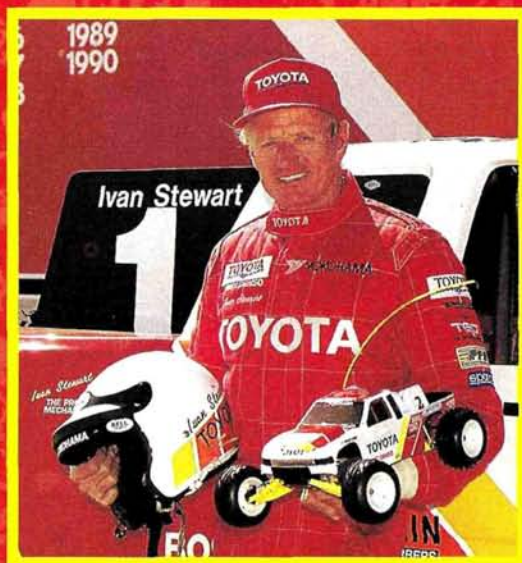
For quick suspension changes, I added RPM Quick-Adjust spring clips (Figure 9). To make a change, simply alter the number of spring clips on the shock body. (To increase damping, add more clips.)

This method also gives you a way to remember your shock-damping setup for different tracks (just count the number of clips used on each track). I stuck Litespeed's Tuff Stuff protector on the bottom of the chassis to take bottoming-out punishment and to decrease drag.

Scott Rapoport (Paint by Scott! of Buena Park, CA) did the very impressive, realistic paint job.

POWER AND CONTROL

I used the small (.75x1.4x1.58 inches), light (1.9 ounces) Novak® M1c speed controller. Its current limiting and high-speed switching allow you to adjust the throttle curve to your driving style. Six Trinity® Pushed P-170s supply the current through Litespeed SuperCons to a Quarter Flash 13-turn, double-wind modi-



IVAN'S STORY



Ivan Stewart began his off-road racing career in 1971, when he entered his Class 2 buggy in desert races. It took him only two years to earn his first win, and he's now the man to beat. He has won so many Baja 500 and Baja 1000 Iron Man championships that Sal Fish and Mickey Thompson nicknamed him "Ironman." Stewart also enjoyed outstanding success on the short tracks before he moved on to the Toyota Motorsports team in 1983..

In his first year with Toyota, he became the "drivers' champion" in the Mickey Thompson off-road race series. Since then, Ivan has continued to win races—three drivers' championships and a record 13 main-event victories. From '83 to '90, Ivan contributed to Team Toyota's eight consecutive Manufacturer's Cup titles.

Having a great model truck isn't enough to win races. Many drivers take the first lap as if it's their last. Although high-tech materials and good construction techniques make these trucks tough, spinning out or hitting the wall can still damage your model and eliminate your chances for a win in that heat.

When we asked Ivan Stewart about his race strategy, he said, "In a stadium race, I like to stay out of trouble and maintain my position for the first two laps. For desert racing, I usually don't do anything harsh for the first 50 miles. I stay focused on what I'm doing. Going into the race, I know it's a certain percentage of luck, so it's good to start the race with a level head. A lot of guys are nervous, especially at the start. I've learned to make other drivers' nervous energy work for me."

Many drivers aren't really sure how to get around the track as quickly as possible. When asked what driving skills are necessary to be a good off-road driver, Ivan replied, "You want to drive smoothly, with little wasted effort. Try not to fly the highest or



the farthest, but the smoothest. You want to find a good line and stick to it."

So there you have it—a great model truck and some good advice to get you to the checkered flag.



RC10T PARTS LIST

The parts for the model truck and its aftermarket accessories are available at your local hobby shop.

The R/C truck consists of:

Chassis	Associated RC10T
Chassis stiffening kit	A&L
Bellcrank set	A&L
Ultra Arms	Quarter Flash
Titanium turnbuckles	RCPS
Retaining rings/clips	RCPS
Titanium hinge pins/kingpins	Lunsford
Body	Pro-Line* Toyota Lexan stadium body
Motor	Quarter Flash modified 13-turn double
Motor cooling	Litespeed
Drive train:	
Transmission	Associated Stealth single-speed
Final drive	Interchangeable
Gears	Robinson
Suspension:	
Front/rear	4W independent
Shocks	Associated Teflon-coated Team shocks
Brakes	Novak proportional electric
Wheels	Pro-Line, one-piece Aero
Tires	Pro-Line 7040/rear, 7045/front

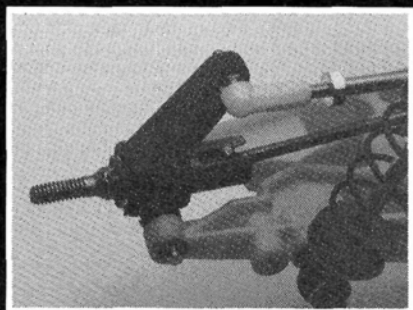
Inside "Ironman's" Truck

Before constructing a replica of the Stewart truck, I first took a look at the characteristics of the real truck built by the Toyota team:



R/C racers will recognize some of the suspension components on Ivan Stewart's full-size Toyota Motor-sports racing truck.

Chassis	Toyota regular cab/PPI tube chassis
Body	Steel roof, fiberglass fenders, cab, door and hood.
Engine	V-6, single overhead cam, 2 valves per cylinder
Displacement	3.0 liter
Power	275 bhp at 8,000rpm
Induction	TRD/EFI Technologies
Bore	87.5mm
Stroke	82mm
Maximum torque	219 pounds/feet at 6500 rpm
Compression ratio	14.4:1
Spark plugs	Nippondenso
Drive Train	
Transmission	PPI single-speed automatic
Final drive	Interchangeable
Suspension:	
Front/rear	Position-sensitive coil-spring
Shocks	Bilstein velocity-sensitive
Brakes	Tilton 11-inch disk, 4-piston A.P. calipers
Wheels and tires:	
Wheels	Pro-10
Tires	Yokohama YB12 Mud Diggers
Race weight	3,000 pounds
Wheelbase	104 inches
Overall length	178 inches
Overall width	72 inches
Height	64 inches
Track width (f/r)	67 inches
Fuel capacity	6 gallons



These Ultra Arms from Quarter Flash have small ball bearings that pivot with minimal friction on the 10T's hinge pins.

fied motor. A Litespeed Litesink motor cooler keeps the motor cool while it's running.

I chose an Airtronics* 3P FM radio system—one of the first microprocessor-controlled radios. You can read all the settings on an LCD screen. The radio also has a stopwatch and can be programmed with trim settings for three vehicles. The supplied radio receiver is the .88-ounce Airtronics 3-channel micro receiver. The Futaba* S9301 steering servo has 69.5 ounce/inches of torque; it can turn large tires and keep them turned. With a transit time of 0.22 second/60 degrees, steering response is lightning quick. The servo is linked to an A&L steering bellcrank kit with an RCPS steering linkage that can be bolted into the stock holes. The combination provides smooth movement.

It's just as much fun to build and detail an R/C vehicle as it is to drive one. The time and effort spent building pays off in big dividends on the track and on the display shelf. I hope that this article has inspired all of you "Ironman" wannabees out there to build your own "mini Baja" racers. See ya in the desert!

* Here are the addresses of the companies mentioned in this article:
Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.
Litespeed, P.O. Box 4765, Spokane, WA 99202.
A&L Mfg., P.O. Box 2115, Corona, CA 91718.
Quarter Flash Motors, 1143 N. Winstel, Tucson, AZ 85716.
Lunsford Racing, 619 First Ave. E., Albany, OR 97321.



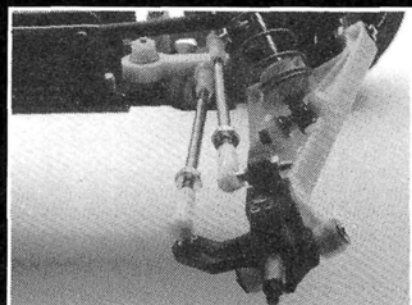
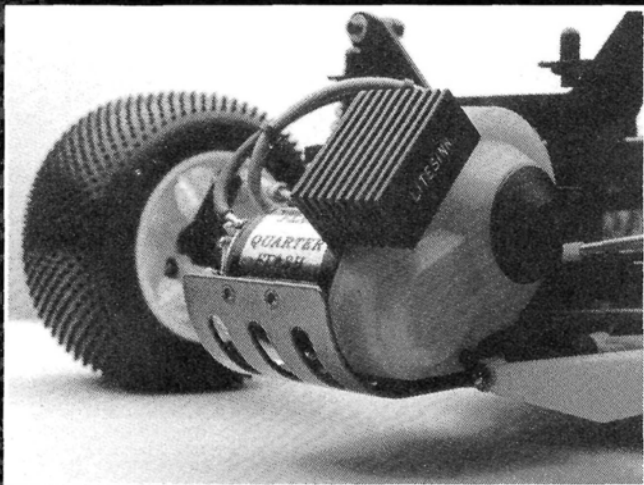
During off hours, the crew can race their R/C trucks on this track outside the PPI facility.

that's as close to that of the professionals' as possible. (Take into account what you can afford, of course!) The PPI Toyota Motorsports facility provides the Toyota team with a very clean, neat environment that reflects their pride in workmanship. Incidentally, the PPI facility includes a 1/10-scale R/C off-road track where workers can race their own R/C trucks at lunch and after work.

You may not have a garage or a room that you can use solely for building model cars, but a clean, organized workbench is a real asset. It will help you to build high-quality models of which you can be proud. Organizing parts and tools is a must; it will enhance your enjoyment of building.



The PPI Toyota Motorsports facility is clean and well-organized.



Above left: Litespeed's Litesink motor-cooling mounting plate keeps the motor cool and increases run time.

Above right: Titanium alert! The 10T's front suspension uses RCPS titanium kingpins and turnbuckles and Robinson Racing's strong, light titanium ball ends.

Above: A&L's ball-bearing steering kit provides precise, slop-free steering.

RCPS, 18312 Gifford St., Fountain Valley, CA 92708.
Robinson Racing Products, 165 N. Malena Dr., Orange, CA 92669.
RPM, 14978 Sierra Bonita Ln., Chino, CA 91710.
Novak Electronics Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707.
Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036.
Airtronics Inc., 11 Autry, Irvine, CA 92718.
Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.
Pro-Line USA, P.O. Box 456, Beaumont, CA 92223.

TROUBLESHOOTING

by FRANK MASI

If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at Radio Control Car Action, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, Radio Control Car Action, 251 Danbury Road, Wilton, CT 06897. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

ONE-WAY ROAD

What's the difference between the one-way front-drive setup on the Lazer ZX-R and the one from Peak Performance that Frank Masi used in the Project Lazer article (*Car Action*, November '91)? Does anyone make an after-market graphite chassis for the Kyosho Lazer like the one on the Lazer Mike Dunn used to win the '91 ROAR Nats?

Your mag rules; it's right up there with "Star Trek" and "Gilligan's Island."

Aaron Kim
Philadelphia, PA

There are several major differences between the ZX-R top layshaft and the one that I used on "Project Lazer." The one-piece Peak Performance shaft on the project car eliminates the need for the center diff on the stock Lazer ZX. Also, the Peak shaft allows the use of after-market spur gears; the stock setup doesn't.

The new ZX-R uses mostly the same components as the Lazer ZX, but the outer part of the shaft is mated to a slipper clutch. Also, there's no center diff. I highly recommend

the ZX-R setup; a slipper clutch is a definite plus—even on a 4WD.

Good news and bad news on the chassis. The bad news: the chassis Mike used on his Lazer was custom-designed by Gil Losi Jr. himself. He made a few for the Losi team drivers, and that's all. The good news is that Kyosho now offers a chassis that's based on the one used by all team drivers at the '91 Off-Road Worlds. Called (what else?) the Worlds chassis (KYOC2864), it's made of graphite, and to improve weight distribution, its cell slots are 5mm behind where they were on the older chassis. The Worlds chassis is included in all new ZX-R kits, or it can be purchased separately.

"Gilligan's Island"? Come on! I think we at least deserve to be compared to "The Partridge Family"—especially since Chianelli is undergoing cosmetic surgery so that he can more closely resemble David Cassidy.



HITTING ROCK BOTTOM

Whenever I drive my RC10 CE off a jump, its bottom hits the ground. Now the screws on the bottom are so badly worn that I have to use needle-nose pliers when I want to repair something. What can I do?

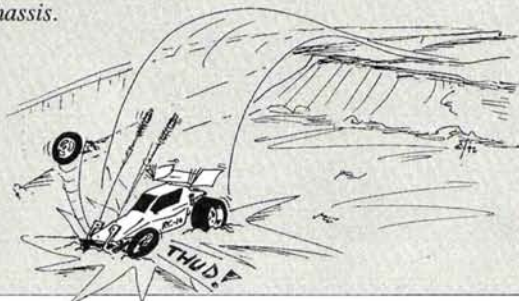
John Byrne
Hilltown, PA

Assuming that the jumps in question aren't abnormally large for a 1/10-scale off-road car, the rear damping of your car is probably too light, i.e., you're using a shock oil that's too thin to absorb adequately the shock of landing after a jump. Your shocks compress too quickly, and this is why the chassis "slaps" the ground. Using the stock, two-hole pistons that come with the RC10, fill the shock with 30WT oil (preferably pure silicone shock oil; its viscosity remains constant regardless of temperature). Most RC10 owners recommend the use of Associated's green (soft) springs for the rear shocks, and I agree.

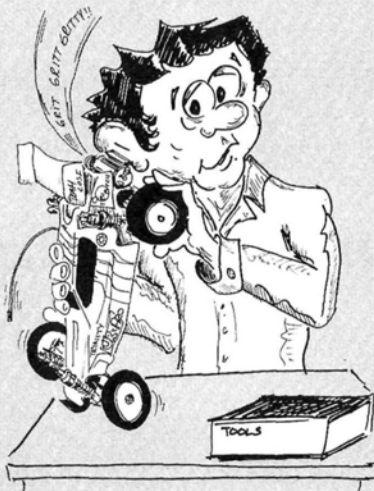
Ride height is also critical in an off-road car. With the car in ready-to-run trim (battery, motor and all electronics

installed), drop it from about 8 inches and note how it sits when the suspension has settled. If it has been set properly, the rear arms should be parallel to the ground; when viewed from the side, the front ride height should be set so that neither side of the chassis is higher than the other.

This will solve the bottoming-out problem and prevent further damage to the underside of the chassis—now, about those screws: I realize that times are tough, but break down and buy new ones. It will make maintenance much easier. Also, try sticking some chassis-protectant material, such as that offered by Associated or Litespeed, on the bottom of the chassis.



ILLUSTRATIONS BY GERRY YARRISH



BALL TO THE WALL

After I had owned my JRX-Pro for about a week and a half, it started to make a grinding noise when I rotated the diff by holding the spur gear and turning one wheel. At my local hobby shop, they said that my diff rings had flat spots on them and that my balls had been flattened, so I bought some new diff rings and some very expensive carbide balls. We put the diff back together and made sure that the balls weren't flattened, but it still makes the noise (sort of). Now the hobby shop people say my thrust bearing is shot.

My diff is built correctly, and I use Associated Stealth diff lube because my kit didn't come with any. I use just the right amount of lube on both sets of balls (the smaller ones and the larger ones). All the gears are in good shape. I don't have a slipper yet, and I run my diff tight (no slip). Please help.

Jeff Solari
Linden, CA

It sounds to me as if dirt or sand has entered your transmission and contaminated the diff lube. The only way to get flat spots on diff balls is if the differential slips excessively; you say that you run the diff tight, so I don't think that this was the problem.

You don't have to buy after-market parts to have a diff that works properly. I swear to you on a stack of spur gears that I've raced my Losi car more than 50 times without replacing one diff component, and it's still smooth! The trick is to build it correctly, then maintain it properly.

First, use the right lube. Stealth lube works well (I also recommend Jammin' Jay's diff lube), but use this type of silicone-based lubricant only on the main diff balls—not the thrust-bearing balls. Also, use only enough diff lube to coat each ball completely; don't overdo it. For the thrust-bearing assembly, use Associated's Black Grease (it comes with the Stealth tranny, but you can buy it separately). Pack the thrust-bearing balls with the grease, but be careful not to get any on the threaded end of the diff-adjustment screw; if you do, the screw might loosen and damage the diff.

Whenever my diff begins to feel gritty, the first thing I look at is the thrust bearing. Clean it thoroughly and inspect the parts for wear. If the washers look worn, simply flip them over and use the other sides. Usually, doing this will alleviate the gritty feeling; if it doesn't, consider buying new washers and balls.

ALGEBRA LESSON

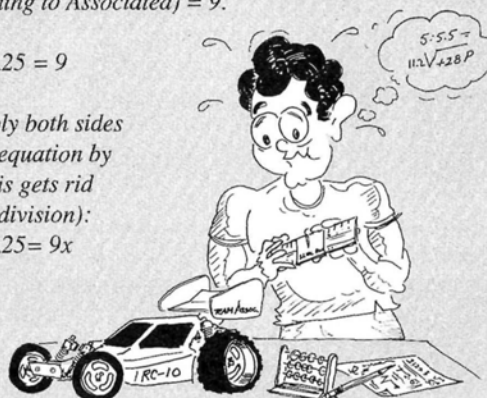
I own an RC10 CE with a Stealth tranny. I use the stock pinion and spur gears, which work well. I want to put the Speedworks 427 16-turn double in my car. Should I gear up or gear down? Is the stress OK on my 410-M5 ESC? My car tends to understeer in right turns, but in left turns, it really oversteers. My trim is fine, and the car goes pretty much straight. What should I do?

Peter Rizzuto
Hanscom AFB, MA

The Speedworks 427 is a modified motor, so you should definitely gear down, i.e., either switch to a smaller pinion gear or to a larger spur gear to achieve a higher gear ratio. A 48-pitch, 81-tooth spur gear comes with the Stealth. Start with a gear ratio of approximately 9:1. To determine which pinion you should use to obtain this ratio, use this formula: spur gear ÷ pinion gear x transmission ratio = final ratio. Plugging the information that we already know into the equation, we get: 81 ÷ pinion gear (the missing part of the puzzle; we'll call it "x") x 2.25 (the Stealth's output ratio according to Associated) = 9.

$$\frac{81}{x} \times 2.25 = 9$$

Multiply both sides of the equation by (x) (this gets rid of the division):
 $81 \times 2.25 = 9x$



Divide both sides by 9 to isolate (x): $\frac{81 \times 2.25}{9} = x$ $x = 20.25$

You need to use a 20-tooth pinion gear to achieve an approximate final drive ratio of 9:1 (round 20.25 down to 20). Pretty easy, eh?

Another method you could use to obtain the desired gear ratio is trial and error. Simply start plugging pinion gears of different sizes into the formula until you get the proper final drive number. I like algebra better! (My friends are more impressed.)

Novak's M5 can easily handle modified motors. As with any ESC, however, make sure that it's mounted so that it receives as much cooling air as possible, and be sure to use the supplied heat sinks. Also, avoid over-gearing the motor, as this can cause the controller to heat up excessively.

Here's an easy way to determine the cause of your car's handling problem: if it understeers on right-hand corners, drive it through the same corner in the opposite direction so that it becomes a left turn. If the car still understeers, then the problem is the track itself; if the car oversteers, something is amiss with its suspension.

Make sure that the front and rear shocks have been built correctly. If either front or rear shock is filled with a different oil than the other, handling problems (such as the ones you've described) can occur. Also, be sure that each of the spring-retaining collars is set properly (each pair should be equal).

The world's top
racers fall under
a Magic spell

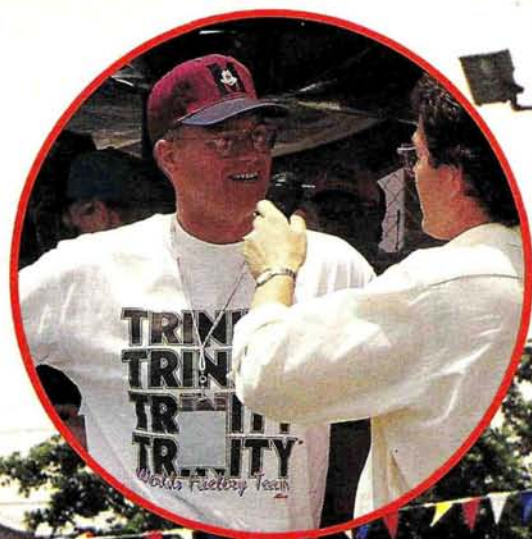
The cars are
set on the grid
before the start
of the first leg
of the A-Main.

by MIKE OGLE

TRINITY / NOVAK

1 / 1 0 - S C A L E

ON-ROAD WORLDS



Here, Thawley interviews Joel Johnson after the first leg of the A-Main.

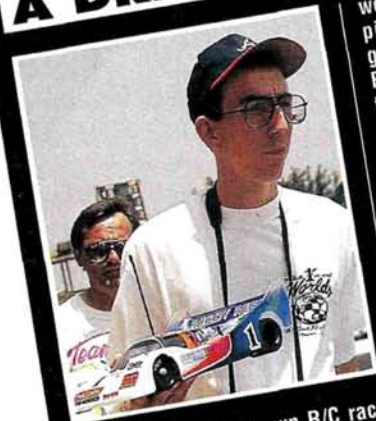
IT WAS A first. It was the inaugural International Federation of Model Auto Racing (IFMAR) World Championship for 1/10-scale electric on-road racing. Sponsored by Trinity and Novak and hosted by the world-famous Ranch Pit Shop in Pomona, CA, it was where more than 100 top racers from the United States, England, Austria, Canada, Denmark, France, Germany, Italy, Japan and several other countries competed for the title of "Champion."

Racers who competed in this prestigious event didn't just show up and fill out entry forms. Every driver had been invited by one of the three worldwide divisions of IFMAR: ROAR (the United States), EFRA (Europe) and FEMCA (the Far East). These chosen few then competed to qualify for the A-Main.



The qualifying was handled IFMAR-style, meaning that the drivers were placed in randomly selected qualifying heats that contained from eight to 10 cars, and each driver was given a starting signal at 1-second intervals. With this setup, racers race only the clock, not one another.

A DREAM COMES TRUE



week of the Worlds and was Cliff's pitman for the event—living the glamorous life of a professional R/C racer. ("Hey, you! Wipe down those tires!")

This was made possible by the Dream Makers, a non-profit organization that gives young people facing some tough personal challenges a chance to experience a "dream week." Donald had narrowed his wish down to visiting Davey Allison, the NASCAR Grand National stock-car driver, or R/C racing with Cliff in California. This avid off-road enthusiast decided to hang with "the Buggymaster," who was surprised and honored that Donald chose to spend the week with him.

Cliff and Donald may not have won the Worlds, but I don't think that even missing the A-Main made either of them feel like anything but winners that week.

Internationally known R/C racers often have legions of fans, most of whom will probably never have the chance to meet their heroes. But Donald Womack, a racer from Tennessee, did meet one of his favorite racers—Team Associated's Cliff Lett. In fact, he hung out with him for the whole

START 'EM UP!

The event started unofficially on the weekend of July 17, 18 and 19, with open practice time for everyone. Despite the temperature, which soared near 100 degrees, most racers made it out

for a few test rounds. Even the sun-loving Californians withered in the heat. The excitement of seeing all the world's top guns (and all the new equipment!) made a quick tour of the pits irresistible.

Team Associated was out in force, with Cliff Lett and several other drivers trying out

their latest body—a slick new Mazda GTP—and a new A-arm front-end setup for the 10L that features adjustable caster and camber.

The Trinity and Losi camps also had a few tricks up their sleeves. Trinity's top gun, Joel Johnson, debuted the brand-new Jim Deiter-designed Evolution

10 on-road car, which was kept under the "towel of secrecy" when it wasn't on the track, and Trinity/Novak racer Tyree Phillips entered a 10L with a beam-type front end. As I later found out, a few other notable racers also sported this setup, and it really worked well on the Ranch's hot asphalt course.

Ralph Burch ran a prototype Hyperdrive car and he also looked like a frontrunner early on. Several European drivers were impressive with Corally cars, but the most unusual entry had to be from France's Giles Henault. It was a good-looking, heavily reworked Tamiya Mercedes C-11 with a custom-built graphite chassis. It was wild!

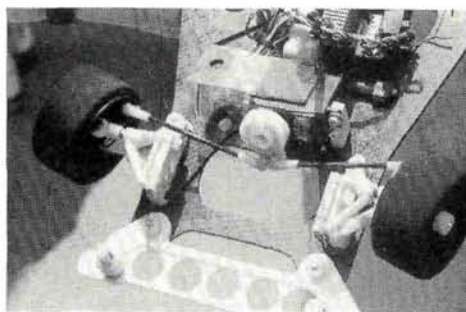
Another chapter of the battery wars saga between Sanyo and Panasonic was written here,

too. Just coming off a sweep of the top three spots at the IFMAR 1/12-Scale World Championships, Panasonic P-170s were the most frequent choice of power seen in the pits. Those purple cells were everywhere! Also notable were Team Orion cells, which were the choice of many European drivers.

ROUND ONE

On Wednesday, the qualifying began. Race director John Thawley called the action and kept the whole show moving. The morning qualifiers produced the fastest times; the track was still relatively cool, and the traction was as good as it would be all day. The first qualifier saw Johnson make the early mark to beat with his 17-lap, 4:10.92 finish. That mark stood unchallenged for the rest of the day.

This starting system works remarkably well. It spaces the cars out nicely to eliminate those nasty first-corner pile-ups, and it gives every competitor a chance to find a line around the



Look at that new Associated front end. Check out the camber adjustment on the top arm. The steering servo can be mounted at this radical angle with the included blocks.

course without a lot of early traffic. Everyone had nine qualifying rounds to try for that perfect run—the one that would put them into the top 10. The top 10 drivers then raced three A-Main legs, and the champion was determined by the best two finishing positions of the three Mains.

From Japan to France to America



Like many on-road R/C racing fans at the Worlds, I wanted to see what unusual or exotic equipment was being run, especially by the European teams. Amid dozens of 10Ls and the occasional Corally, there was one car that had a wild paint job and really was different—Giles Henault's Tamiya Mercedes C-11.

Giles, who hails from France, modified the standard Tamiya kit by replacing the stock plastic tub

with a special, custom-built, two-deck graphite chassis. Giles kept the stock front A-arm suspension, the rear differential and the motor pod, but he replaced the closed-endbell Mabuchi-style motor with a Peak Performance "Animal"-series modified, mounted on what looks like a custom-made aluminum motor mount.

A Novak FM receiver and a 410 MXc speed controller handle the power of the Panasonic P-170s. He topped it all off with the stock Mercedes body and an unusual sponge-technique paint job—a real eye-catcher!

I had an interpreter ask Giles whether Tamiya knew about this; was it some sort of factory project? He just smiled and shook his head. Maybe he just isn't telling.



Associated's Mike Swauger, who is usually noted for his accomplishments in 1/8-scale gas-car racing, had a 17-lap, 4:15 run that gave him the second slot. Jammin' Jay Halsey took his 10L for a nearly 17-lap spin and showed that, although he specializes in off-road, he still has the touch on asphalt!

..but the most unusual entry had to be from France's Giles Henault. It was a good-looking, heavily reworked Tamiya Mercedes C-11 with a custom-built graphite chassis. It was wild!



Jim Deiter inspects the latest Trinity prototype.

Phillips was just 1 second back at 16/4:01 in his "10LT." Guess what the "T" stands for! The first of the Europeans, Jurgen Lautenbach, popped up in 5th at 16/4:02 and was followed by Andy Dobson, Mike Horan, Kent Clausen (hey, this isn't an oval track!), Brian Kinwald (hey, this isn't a dirt track, either!) and Terry Rott.

The second and third rounds were highlighted by a few notable performances from Burch, who cranked off a 14.4-second lap in the heat of the day; Halsey, who was pitching his 10L around like a dirt car and getting 14.6-lap times; and Britain's Mark Jewitt, whose car seemed to have tons of steering, even though the track was getting hot and tricky.

It was interesting to watch

the cars on the track and figure out who had stick transmitter radios and who had wheel-type transmitter controls. The stick-controlled cars seemed to "square-off" the turns in three or four quick movements. Johnson had a servo go crazy on him right before round two (as Mr. Trinity himself, Ernie Provetti, had chest pains), so he didn't compete in that round. He also didn't need to.

TQ THURSDAY

On Thursday, Novak's Phillips seemed to be one of the few racers who were able to turn those fast 14-second lap times consistently during the heat of the day. He clocked in at

17/4:10.58 to TQ, and he basically secured his spot in the A-Main. Mike Blackstock also made a move that day when he "borrowed" Fernando Belair's spare "Tyree-ized" 10L and promptly cranked off a 17-lap run with it.

Other notables runs came from the likes of Burch, whose skillful driving netted him a 16/4:00; Lett, who turned 16/4:04; and Ron Schuur, who went 16/4:07. Gary Kyes of Team Losi looked like a threat in the fifth qualifier, but he, too, was held at 16 laps. Before the day was over, it looked as if you'd need a 17-lap performance just to stay in the top 10.

On Friday, the final three qualifying sessions brought another TQ performance, this time for Team Associated, as

Blackstock took his rent-a-racer to an unprecedented 17/4:08.15. By this time, Belair was probably considering a repo job on the car, but he would have had to struggle to get it out of Blackstock's hands!

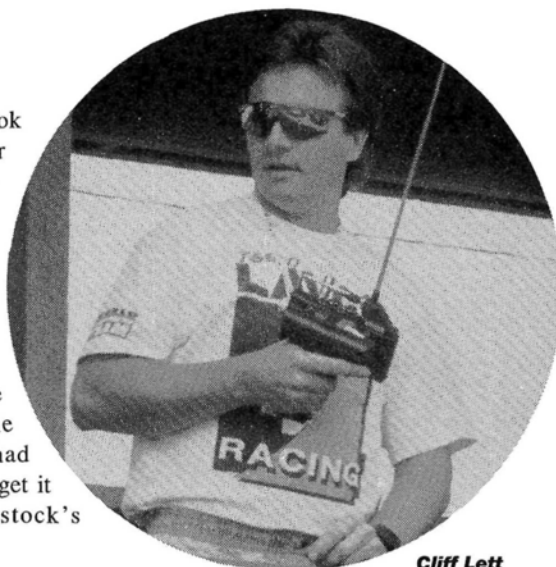
SECRET WEAPON SATURDAY

Saturday's races were divided into 11 Mains, A through K, based on each driver's best run of all nine qualifying heats. The top 10 qualifiers turned out to be Americans, and seven of them were Californians.

Blackstock led the list. His Reedy-powered 10L would be in the pole position for each leg of the World Championship. Johnson and the Trinity "Secret Weapon" were right behind him. Phillips, whose reworked 10L featured Trinity horsepower and, of course, Novak electronics, qualified 3rd. The 4th qualifier was North Carolina's

Burch, with his Cam-powered Hyperdrive car. In the 5th position was Associated's Swauger and his Ron Paris-prepared 10L, and he was followed by Bobby Horan with his Reedy-powered 10L. Barry Baker's 10L, also powered by Reedy, sat back in the pack, followed by Tony Neisinger with another Reedy-powered 10L, Halsey with a Trinity-powered 10L and Schuur in a hybrid 10L/HPI car with Cam power.

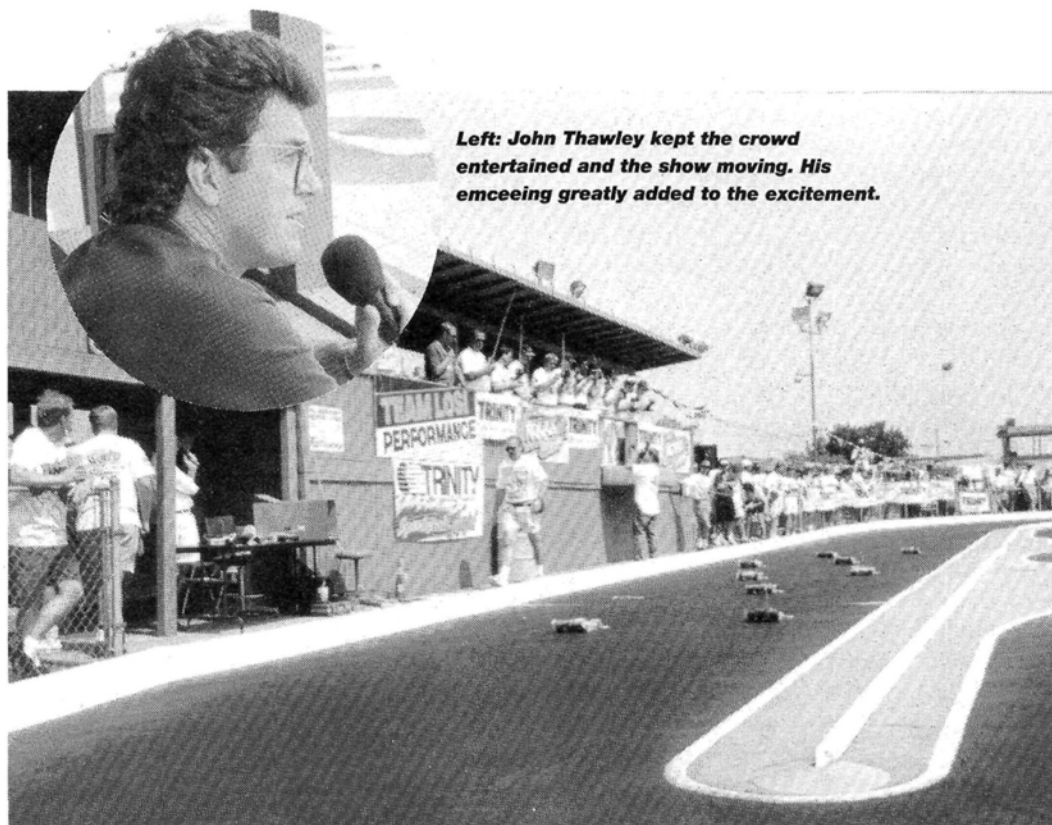
As of Friday night, no one had actually raced against



Cliff Lett missed the A-Main by just a few seconds, but he dominated the B-Main.



Curtis Hustung, a real gentleman, plays pitman for an Associated teammate.



Left: John Thawley kept the crowd entertained and the show moving. His emceeing greatly added to the excitement.

The regular starting-grid system was used in the Mains, but the qualifiers were run IFMAR-style.

another racer, so on Saturday, all the Mains were posted and a practice session for each was held. No more polite passing; from then on, it was every man for himself!

Saturday morning's events brought out the largest number of spectators we saw all week-end. At times, people were packed three deep all the way around the outside of the track.

Everyone expected to see a truly amazing driving display...and they did!

The practice sessions went well, with not as much fender-bending as you might have expected. This was the very last chance for the teams to fine-tune their cars, and most drivers were interested in using the practice session for just that, not for heated dicing for position.

Johnson continued to show his muscles with a 17/4.06 (even in traffic!) and ran away to a 3/4-lap lead.

DRIVERS READY

It was time for the first of the three A-Main legs. A win here would establish an early lead toward the final standings, and everyone was gunning for Blackstock, who was sitting on

the pole. At the sound of the tone, everyone left the line cleanly, especially Johnson, who jumped out to a first-corner lead and stretched it into a 4-second win over Burch; Phillips just barely missed 17 laps with his 16/4.02. Horan and Neisinger battled to a tight finish, with Horan's 16/4.04.07 squeaking by Neisinger's 16/4.04.29. That's close, but not as close as Swauger and Schuur's battle for 6th place, which was decided by a .01-second margin.

Everyone knew that if Joel won the second leg, it was all over; he would take the title. It was make-or-break time, and the racers were deadly serious. The usual friendly drivers'-stand banter had gone, replaced by the quiet concentration of 10 of the best drivers in the world.

Johnson took the holeshot again at the start, followed by Phillips. They duked it out until about the 1-minute mark, but then Johnson found his line and pulled away to a clear, 1/3-lap advantage. This time, Johnson won decisively by turning the only 17-lap performance in the race—and captured the World Championship with it! Phillips settled for 2nd (16/4:01.39) and Neisinger improved with his 3rd-place, 16/4:02.11 finish.

So, with the Championship

1 9 9 2 I F M A R 1 / 1 0 S C A L E

FIN	NAME	CHASSIS	MOTOR	ESC	RADIO	BATTERIES	CHARGER
1	Joel Johnson	Trinity	Trinity	Novak HPc	Airtronics	Trinity P-170s	Turbothirty
2	Tyree Phillips	Associated 10LT	Trinity	Novak HPc	KO EX-1	Trinity P-170s	Novak
3	Tony Neisinger	Associated 10L	Reedy Mr. O	Novak MXc	Airtronics	Max-Cell	Novak
4	Mike Blackstock	Associated 10LT	Reedy Mr. S	Novak HPc	Airtronics	Max-Cell	Novak
5	Jay Halsey	Associated 10L	Trinity	Novak M5	Airtronics	Trinity	Novak
6	Ralph Burch	Hyperdrive prototype	CAM	Tekin	Futaba	PTI	Tekin
7	Mike Swauger	Paris 10L	Reedy	Tekin	Airtronics	Max-Cell	Novak
8	Bobby Horan	Associated 10L	Reedy Mr. S	Novak M1c	Airtronics 3P	Max-Cell	Novak
9	Ron Schuur	Assoc./HPI/Tyree-ized	CAM	Novak	KO Propo	Arlington	Novak
10	Barry Baker	Associated 10L	Reedy Mr. O	Novak HPc	KO EX-1	Max-Cell	Novak

already decided, the battle was on for 2nd place! Phillips, Neisinger and Burch, who had had a disastrous second round, were all still in the hunt. The rest of the field came in in this order: Halsey, Blackstock, Schuur, Swauger, Horan, Baker and Burch.

Johnson and Provetti were delighted to take the title, especially after, as Provetti said, "We really got our clocks cleaned at Michigan two weeks ago." They were determined not to let it happen again, and they didn't!

THE MIGHT OF MAGIC

With the World Championship sewn up, some of the pressure was off for the third leg. Again, Johnson shot out to an early lead, but all eyes were on the hapless Burch, whose car had flipped over at the 10-second mark. He recovered from that incident only to become tangled with another racer only a half a lap later. It wasn't his day. Meanwhile, Phillips attempted to chase down Johnson, who still maintained a 40-foot lead. At the 1:30 mark, Blackstock came alive and overtook Phillips for 2nd place. At 2:00, it was Johnson, Blackstock and Phillips, but Neisinger slowly worked his way up and slipped into 3rd. On this day, no one



Tech officials check-in the transponders from the previous round.

could catch Johnson—the "Magic One"—as he again turned the only 17-lap run, a 17/4:10.03. Blackstock's 16/4:00.62 brought him in at 2nd place and Neisinger's 16/4:02.57 landed him in 3rd.

The final standings were determined by IFMAR's scoring method: a win equals 10 points; a 2nd place, nine points; a 3rd, eight points, etc.

Each racer's two best finishes were added, and the winner was the one with the highest score. The third finish would be used to break any ties.

As everyone already knew, Joel Johnson was the champion; Tyree Phillips placed 2nd overall, followed by Tony Neisinger. Then came Blackstock, Halsey, Burch, Swauger, Horan, Schuur and Baker.

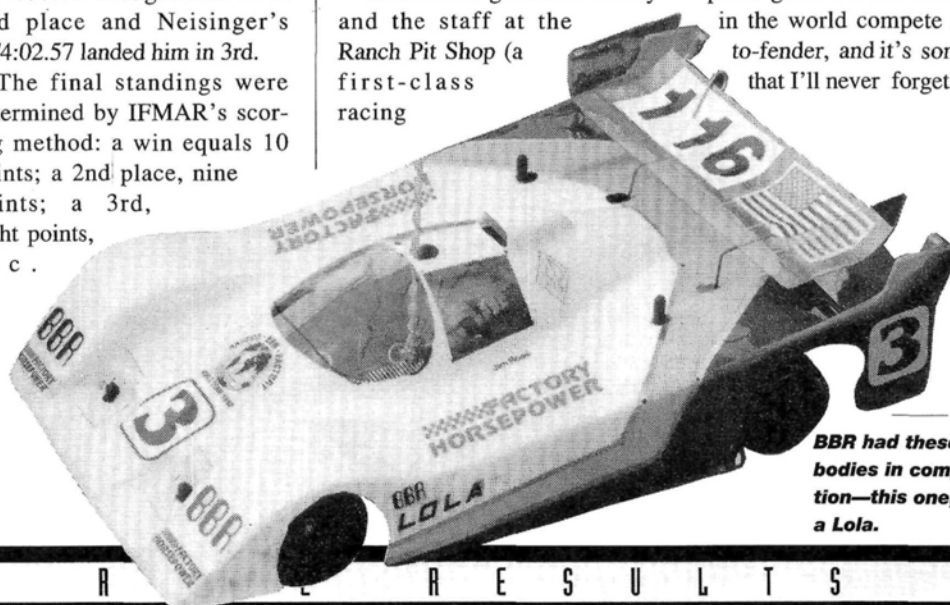
With more than 100 competitors from all over the world jammed into one place for a steaming week, you might have expected at least a few tempers to flare, but even the disagreements were pretty civilized, including the battery protest that was filed at the end of the event and quickly settled by the IFMAR officials.

Credit must go to Jim Halsey and the staff at the Ranch Pit Shop (a first-class racing

facility) who handled such a large race so efficiently; to John Thawley, whose commentary kept us all entertained;

"He recovered from that incident only to become tangled with another racer only a half a lap later. It wasn't his day."

and, of course, to Trinity and Novak for their sponsorship. Congratulations to Joel Johnson and Trinity for the most convincing victory in IFMAR history, and to all the other competitors who turned in world-class performances. It was a privilege to see the best drivers in the world compete fender-to-fender, and it's something that I'll never forget. ■



BBR had these new bodies in competition—this one, a Lola.

W O R L D S R A C E R E S U L T S

BODY	TIRES	SPONSORS
Andy's Nissan	TRC ZR-1	Trinity, TRC, Novak, Airtronics, Andy's, Composite Craft, Tecna Craft
Andy's Nissan	TRC	Novak, Trinity, TRC, Andy's, Composite Craft, Tecna Craft
Andy's Nissan	Atlantic Gomme/TRC	Assoc., Reedy, Max-Cell, Airtronics, Novak, Autographics, Paris, Du-Mor, Star Force, Andy's, Killam Paint
Andy's Nissan	TRC	Assoc., Reedy, Novak, TRC, Bud's, Paragon, Du-Mor, Max-Cell, HPI, Killam Paint
Andy's Nissan	Jaco	Trinity, Novak, Jaco, Airtronics, Team Losi, Jammin' Products, Andy's, HPI
Associated Nissan	PSE	Hyperdrive, Futaba, PTI, CAM, Tekin, PSE, Du-Mor, Tecna Craft
Associated Jag	TRC/Gomme	Assoc., Paris, Airtronics, Max-Cell, Atlantic Gomme, Novak, Du-Mor, Tekin, Tecna Craft, Twister, Paint by Fox
PSE Mazda	PSA gold	Assoc., Reedy, Max-Cell, Novak, Airtronics, Parma/PSE, Du-Mor, HPI, Tecna Craft, Curtis, RCPS
Andy's Nissan	TRC	CAM, Novak, Assoc., TRC, Star Force, Andy's, KO, Bud's, HPI, Tecna Craft
Associated Nissan	PSE green	Assoc., Reedy, Novak, KO, Max-Cell, Du-Mor, Tecna Craft, Bud's, Parma/PSE

Buy a Used Car

by STAN VANDRUFF



BUYER BEWARE

YEAH, I KNOW how you feel. Every year, the guy next door is the first to get the car of the year. But I can see that you're smarter than he is. Your R/C needs are modest, and you want to stretch your dollar. Trust me, what you need is this beautiful little pre-owned cream puff... I've never seen a used-R/C-car lot (^{1/10}-scale banners would be cute, wouldn't they?), but I *have* been fortunate enough to find a couple of used R/C bargains.

WHO WOULD BUY A USED CAR?

Buying a used R/C car doesn't mean that you're cheap. It can be the perfect way to try a new aspect of the hobby. If you're an off-roader, you might not want to spend the bucks for a new pan car, but with a used one, you could find out if it's something you want to pursue without spending too much. Not sure that an off-road truck is right for you? Why not look for a used one to play around with?

You might also be tempted to buy a used car if you stumble across one that's like new, or if you find a forgotten mechanical marvel that has been out of production since your dad was a kid.

Maybe you'd like to have a back-up car. You could experiment with setups on the back-up, and have your "main car" ready with a setup that you know works well. Perhaps you're accident-prone, and you need at least one spare of *everything*. A used car would be cheaper than that bucketful of spare parts you've been considering. Whatever your reason for looking



Buying a used car saves you money, but you have to determine whether it has been abused before you buy it. Don't buy a used car if you'll have to replace a ton of parts; this would defeat the purpose!

at a used car, buy a good one. It isn't a bargain if you can't use it.

WHERE CAN I FIND A BARGAIN?

You should always be able to find used models of the most popular cars. Secondhand RC10s, 10Ls and JRXs abound. Lesser-known cars are out there, too, but if you're looking for something unusual, you'll have to be patient. You'll find the best price when you have several alternatives.

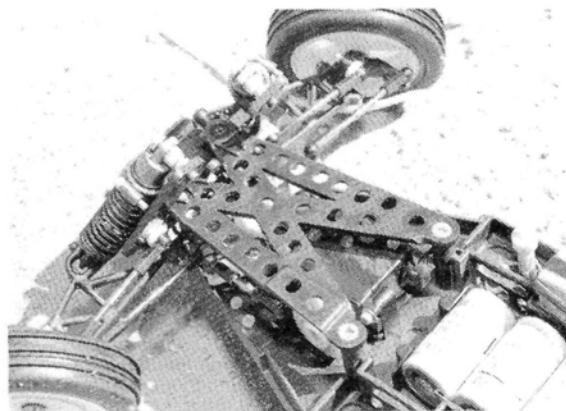
My local club is the first place I look for a used car. If you belong to a club, you'll know the members, and you'll know how they take care of their stuff. You can ask questions about the car after the sale, and you can get advice about setups and modifications.

Most people who work in hobby shops try out the stuff they sell.

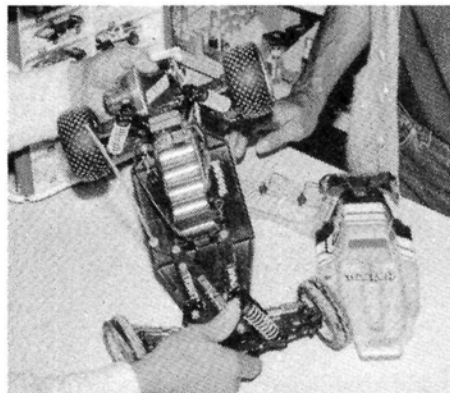
They can get the best cars at a better price than you and I can, so they buy new cars fairly often. If you're looking for something that was considered exotic last year, talk to the guys behind the counter.

Some hobby shops have a bulletin board for personal ads, and a few shops may display used items. Shops try to help their regular customers sell their old cars so they can afford to buy new ones! If you're new to R/C, the hobby shop is also a good source of help. The people there like to give advice, and you'll always know where to find them!

I've found the greatest variety of used cars in the hobby section of classified ads. Other places to try are flea markets, yard sales and swap meets. Remember, however, to buy only from someone you can trust. A friend, a member of your club, or a hobby shop that you visit frequently would be ideal. The best price might come from a stranger, but you should be able to believe what he tells you. Otherwise, you might end up with junk.



A car that has many holes drilled in its chassis or other crucial areas may not be right for a novice driver. It's apt to break more easily during hard collisions.



A careful inspection of the parts can tell you whether the car has been thrashed. Include the costs of parts that must be replaced in your budget, then decide if it's worth it.

WHAT TO LOOK FOR

First, look for quality. Was the car worth having when it was new? Is it still in production, or is it recent enough for you to still get spare parts? How about upgrades? Unless you want something just to look at, stick with cars that are fairly modern.

Did the owner take good care of the car? You can tell how many crash-landings an R/C plane has suffered, but you have to look carefully when you inspect a used R/C car. Don't buy a dirty car. Ask the seller to clean it up—or do it yourself—before you make a decision. Inspect carefully for missing, bent, or broken parts. How much work will you have to do to restore the car?

Why is the car for sale? Did the owner get tired of it, or was he unable to get it to run well? Is the car damaged beyond repair? If he tells

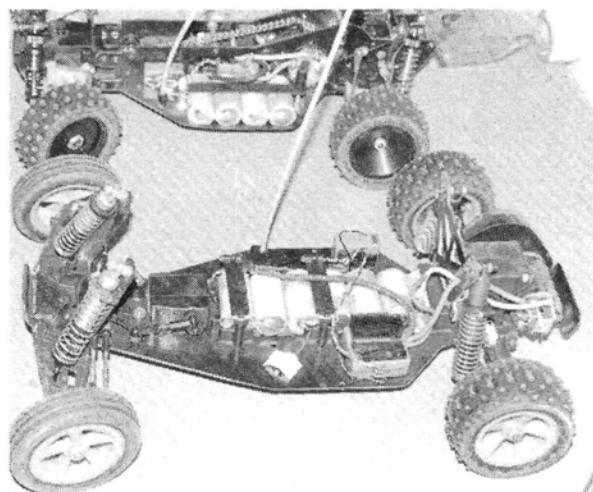
you *he just grew out of it*, try not to laugh out loud.

Modifications can be good or bad. I steer clear of cars that have a dozen holes drilled in the chassis, or those with strange or cheap after-market parts. Some mods, however, can be real pluses. New bearings are always good, and so is a nicely painted body. A high-quality motor or radio may also be worth a few extra bucks, but I don't think used batteries increase a car's value, because you don't know if they're good until you try them out. All new cars come with instructions, and you should get them when you buy a secondhand car.

WHAT'S IT WORTH?

Very few R/C dealers will negotiate the price of a new car, but you should always consider the asking price of used merchandise to be a starting point. The "fair" price of a used car is highly subjective; it's worth what it's worth to you. If you just *have* to have something, you may end up paying as much as you would for a new car. If you take your time and look around, however, you could find a terrific bargain. If you want a bargain, be patient.

Unless a car has been expertly assembled and finished and is in perfect condition, don't



Just remember that any car is a used car after its first run. You have a distinct advantage over the seller when you have cash in hand: you can always walk away from the deal if you don't like the car.

able, offer a little less and see if he'll take it (almost everyone will come down \$5 or \$10). If the price is too high, make a counteroffer (an offer that's a little *less* than what you want to pay). He'll probably suggest another price that's between his original price and your offer. Keep making counter offers until you reach a price that's acceptable to both of you. If a seller asks too much and he doesn't want to negotiate, thank him and move on to the next opportunity. Remember, the seller wants to make as much as he can; you only want to pay what the car is worth to you.

Some sellers will think that their old R/C car is a valuable collectors item. Don't be rude, but quickly pass these up, too. If you like older cars (as I do), you're certainly welcome to collect a few, but don't expect them to ever be valuable. They have to be rare, desirable and in mint condition to have any significant worth.

If you've decided to buy a used car, don't be shy. Ask everyone you know if they have one for sale. Look the cars over and choose the best one for your money. Deal with someone you can trust, and be fair in return. With the money you save, you can buy a rainy-day car, a sunny-day car—one for each day of the week! Just don't tell your parents (or your spouse) about your plans! ■

HOW TO SPOT A BARGAIN

How can you tell when a used car is a bargain? You have to know the value of what's available. Reading magazines is a good start, but you should also visit hobby shops and look at the cars on display. Ask what comes with the cars and what's considered an accessory. Go to a few races and talk to people in the pits. See how their cars are equipped, and ask how much they cost.

Don't judge a car's quality by its body, or by its cool-looking wheels. Cars are usually priced according to their features. Better cars have high-quality parts and more "adjustments," e.g., entry-level pan cars have minimal suspension and few adjustments. Top-of-the-line R/C cars use materials like graphite and titanium and have suspensions and adjustments that rival those of a full-size car.

Accessories also affect a car's value, but remember: if it's something you don't want, it doesn't increase a car's value. If a car has an expensive modified motor, but you're only interested in stock, don't pay more for the modified motor.

When you have an idea of a car's quality, go to the hobby shop and get prices on similar cars. Look at the price of accessories, too. Motors can cost from \$10 to \$70 or more. Speed controllers, wheels and other accessories also have wide price ranges. Because the quality of accessories is more difficult to judge, you may have to find exactly the same model to see how much the car you're considering costs when it's new.

A rule of thumb: a car that's in nearly perfect condition will be worth about half of what it costs new (not half of the suggested retail price, but half of what you'd pay where you shop).

LOOK! WHO'S TRYING to kid who? How can a company that's best-known for making ride-on plastic caterpillars produce a good-looking, finely crafted, competitive R/C car? Well, swallow your pride and bite your tongue: Tomy has gone where no toy company has gone before!

World-renowned for its success among the sandbox set, Tomy has expanded its horizons and aggressively attacked a specialized market—R/C racing cars! As a matter of fact, Tomy has formed a special hobby division to produce serious hardware for R/C enthusiasts. Only total devotion to research and design could have produced this newest 4WD qualifier—the Tomy Intruder!

What makes this four-legged prowler such a knockout contender? Try oil-filled, coil-over shocks, front and rear belt drives with a one-way front drive, a double-deck chassis for increased rigidity, ball-bearings on all four wheels and a lightweight, strong, cast-magnesium motor mount.

KIT TALK

At first inspection, it's evident that Tomy is taking the hobby market very seriously. The Intruder's packaging is exquisite and all the parts are organized in labeled bags.

Although the instruction booklet that I used hadn't been finalized, it was already a good guide through the building jungle. The Intruder isn't an entry-level car, but it goes together easily.

The design of the front and rear ball diffs is familiar, except for the finely machined aluminum diff plates, which are threaded to accept steel outdrives. Ten balls in each diff produce very smooth action. Plastic bearings are used in the drive train, but a ball-bearing kit is available.

Anything that spins will spin more freely and with less drag on ball bearings.

The drive system is of particular interest because it offers four assembly options: the 6:4 torque split-center diff

system, which has a planetary drive gear and, according to the instructions, has high bite on rugged terrain; the 6:4 torque split-center diff/front-wheel, one-way system, which has a one-way bearing to allow the front wheels to "free wheel"; the rear direct-drive/front one-way setup that's used by most racers; and the rear and front direct-drive system. I chose the rear direct-drive/front one-way setup.

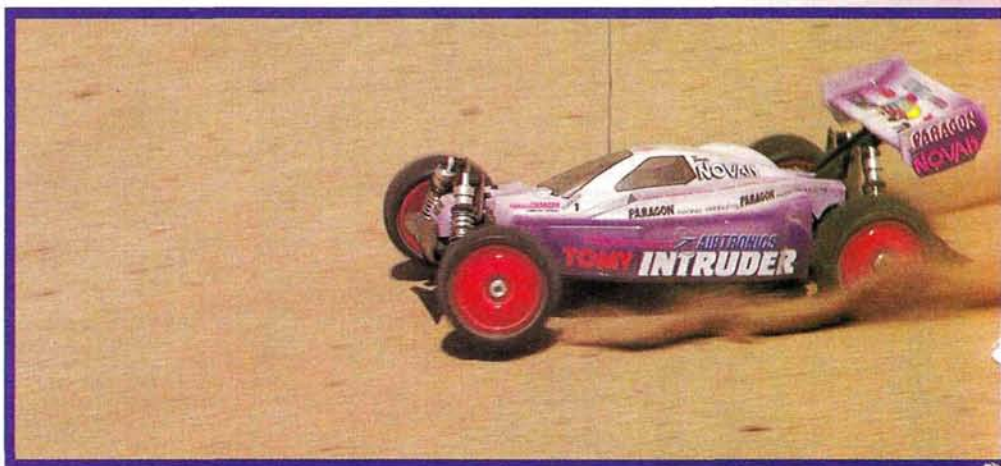
An optional rear-traction control slipper is available, and it works very well in my setup. The ball bearings included with the spur-gear drive assembly make the transmission action smooth.

The front and rear bulkheads and the motor mount are bolted to the chassis. They fit perfectly; I've never seen such a tight fit. It's amazing what good quality control can do for a product.

The stock double-deck fiberglass chassis can accommodate seven cells in stick- or saddle-pack configurations. A super-quality graphite chassis that has the same type of upper deck is available, so save those nickels and dimes. It's a hot ticket when lightness and strength are important.

When all the diffs and belts are in place, you can set the belt tension using eccentric housings—much like the Schumacher design. With the proper tensions set, the entire driveline is supersmooth.

All arms are made of super-strong Du Pont nylon and pivot around smoothly polished pins. Here again, the fit is very exact, with little binding or slop.



T O M Y

by DEREK ARITA

Intruder



back door man...

At the end of each front arm is a cast-magnesium steering block fitted with two ball bearings that support the machined-aluminum wheel hubs. Lightweight hubs are available as options, and universal drive shafts are supplied for all four wheels. No expense seems to have been spared to give racers every possible competitive advantage.

The shock absorbers have machined-aluminum bodies with two lower seals and one upper bladder. With their polished shafts, these shocks are ultra-smooth. As usual, you have a choice of pistons to vary damping. Although only one set of springs is available, I have



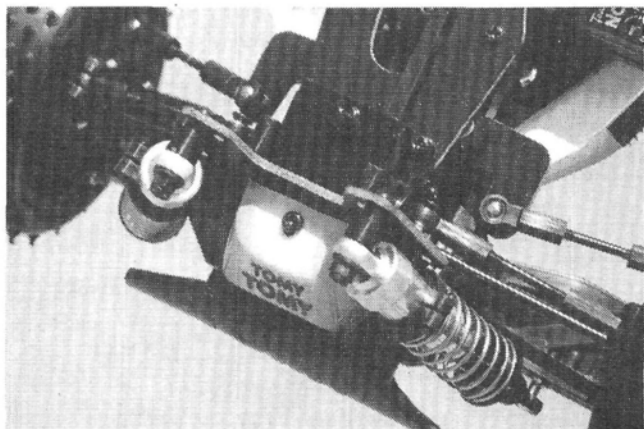
The rear suspension consists of long A-arms and oil-filled shocks. The considerable range of travel soaks up large bumps with ease.

it on good authority that Losi* springs will work well on these shocks to greatly increase the car's "tunability." With upper and lower shock-mounting positions in the front and the rear, fine-tuning should be no problem at all.

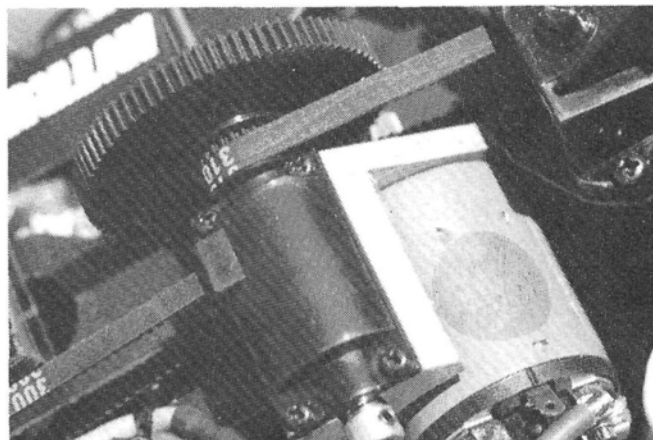
With the detailed body and lower Lexan pan in place, the Intruder's inner workings are well-protected from dirt and rocks. You may have to insert a piece of sponge into the 2.2-inch wheels for support, but traction doesn't seem to be a problem. If grip does come into question, guess what? Tomy offers a line of racing tires that range from soft to hard. Check it out.

THE QUEST TEST

Disappointment never entered my mind as I drove the Intruder. With a tweak here and a twist there, it was easy to improve the handling characteristics of this car.



The Intruder has a fully independent front suspension with large, aluminum-bodied, oil-filled shocks. Camber and toe adjustments can be made easily.



You can create four different driveline setups by altering the Intruder's top shaft configuration. A Trinity Championship Series 12-turn quad motor spins the car's belts.

Too often, adjustments that improve handling are barely detectable. It's nice to take a car right out of the box and find that it's so well tuned that only small adjustments are required to produce those blasts of fun that we all race for.

The Intruder provided strong acceleration *and* a high top end. So silent were my runs that I never once heard the car over others on the track! Isn't that just like a *real* intruder?

The Tomy car powered right through the whoop-de-dooos, and tight turns were half-powered delights. Although this track was a little loose and sandy, a deft hand at the transmitter allowed completely controlled jumps. A quick shot of the trigger pushed the buggy up and over with ease, and the front-to-rear landings were gentle; 30WT silicone shock oil seemed to do the trick.

Tomy has an arsenal of high-quality parts and designs. Out of the box, this car will easily make its way to the A-Mains of race-land. Move over people, and make room for the Intruder!

**Here are the addresses of the companies mentioned in this article:*

Tomy America Inc., 1050 W. Central Ave., Brea, CA 92621.

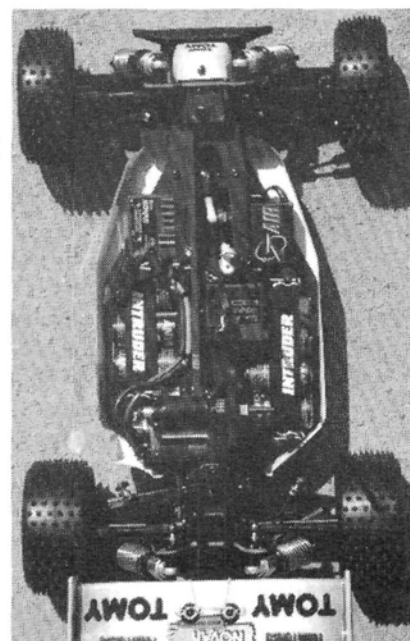
Losi, 13848 Magnolia Ave., Chino, CA 91710.

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036.

Deans Connectors; distributed by Ace R/C, 116 W. 19th St., Box 511C, Higginsville, MO 64037.

Airtronics Inc., 11 Autry, Irvine, CA 92718.

Novak Electronics Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707. ■



The Intruder's layout is similar to those of the Yokomo Works and the Kyosho Lazer ZX-R, it uses two drive belts, twin ball diffs and saddle-pack batteries.

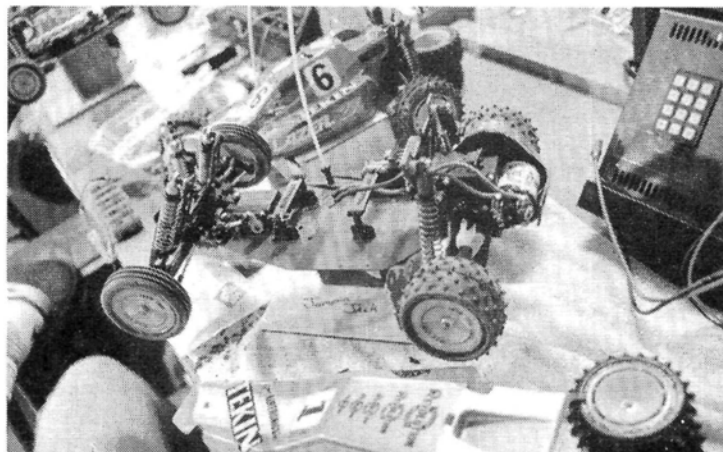
Restore a Used Car

HOW TO

turn back time,
make it shine

LET'S FACE IT; every car is a used car five minutes after it has been put together, and you can take some things for granted with a new car: new parts that fit together perfectly, cleanliness, and—if you put it together—you know it's properly built. But if you buy a used car, you don't know how it has been treated, so you must check it thoroughly to ensure that your "good deal" doesn't turn out to be a raw deal.

by STAN VanDRUFF



Your car isn't performing properly? Maybe it's time to rebuild it to bring it back up to speed. If you take the proper steps, it will run like new.

BUYER BEWARE!

Think about it: no one gets rid of a car when it's sparkling clean and dialed-in perfectly. I'd want to get rid of my car right after that nasty, muddy race in which everything went wrong. Wouldn't you?

When you restore a used car, you need to go over everything as if you were building one from a kit. The difference is that you may have to take your used car apart, clean it and inspect

are mounted under the speed controller, and you have to assume that adjustments were made incorrectly.

Approach your restoration project methodically and work your way from the outside in. Remove the body and clean it in warm, soapy water. With a soft cloth, gently rub away all the dirt. Tire marks can be removed with alcohol and elbow grease. Remove stubborn marks with an eraser. (Don't use an ink eraser because its abrasiveness will dull the car's finish.)

TIRED ALREADY?

Remove the wheels. With a stiff toothbrush, brush off as much dirt as you can, then shake each wheel close to your ear. If you hear a rattling, dirt is trapped inside the tires. To clean out the tire, you can cut a hole or two in the tread and let centrifugal force sling the dirt out as the wheel spins.

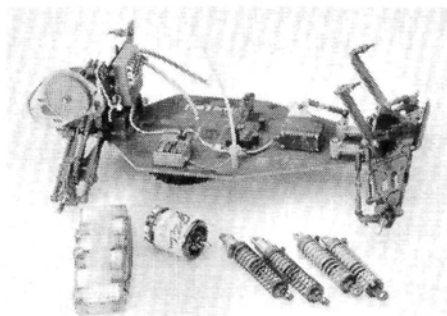
I like to reuse my wheel rims, so I glue the tires on in just three or four spots. But dirt can sometimes get trapped under the tires' mounting beads and distort them. To avoid this, make sure your tires are properly seated on the rims. Next, wash them in warm, soapy water; rinse them in clean water and dry them. Once the tires are dry, spray them with silicone to prevent the dirt from sticking the next time.

I use a soft, 3-inch paintbrush to dust off the rest of the car and a stiff toothbrush to

clean caked-on dirt off the nuts and bolts that protrude from the chassis. Use a scribe or small screwdriver to clean mud out of the slots in screw heads and other small holes. It's better to do this now than to knock dirt off when there are clean bearings or gears nearby.

GET YOUR BEARINGS

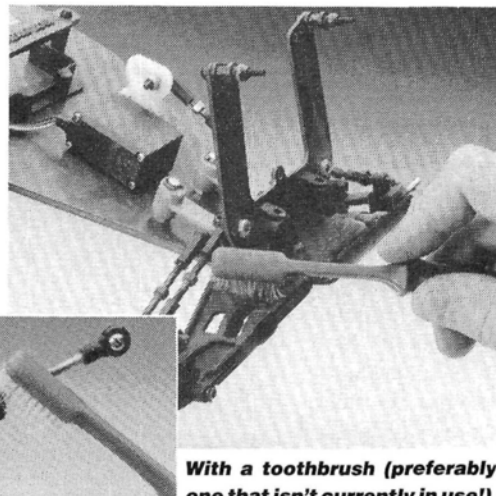
Whether the car has bushings or bearings, they should be cleaned with a good bearing spray or motor spray. Even carpet contains enough dust to wear your bearings. (Otherwise, they'd last forever, wouldn't they?) To clean them, remove the bearings from the car; you'll do a better job, and you won't risk melting any plastic with the bearing/motor spray. (Don't



After you've disassembled the car, it will be much easier to work on. Remove the electronics and organize them so that you'll be able to find them later.

it before you put it back together. When you've finished, you'll have a car or truck that's as good as new, but much less expensive.

A used car may be missing parts because they were broken, removed to save weight, or just because its owner didn't know any better. Motor capacitors, servo-savers, on/off switches and battery connectors are often missing. Antennas get clipped for convenience, receivers



With a toothbrush (preferably one that isn't currently in use!), remove any caked-on dirt from suspension arms, tires and rims.



Remove the motor and clean it with motor spray. Check the commutator for damage, and then clean it with a commutator stick. If you're running a modified motor, you might have to rebuild it.

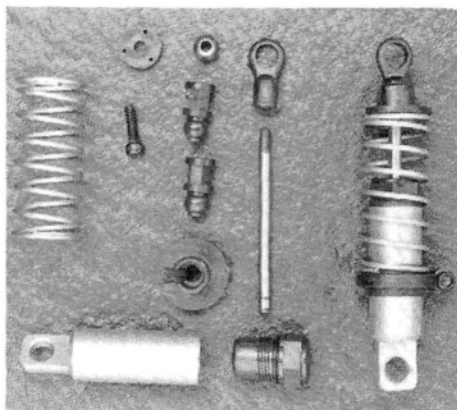
ask me how I know!)

If you hear grinding or feel any grittiness in the bearing, or if the liquid coming out of the bearings isn't absolutely clear, keep spraying. If there's enough dirt to make a grinding noise, your bearings won't last until the next battery charge. Many people put a tiny drop of oil on the bearings before putting them back in the car. I'd do this only on a car that runs indoors; any oil on those that run on dirt tracks will attract too much dust. (If you want to do it properly, get a set of Boca* bearings with Ultra-Seals®. These are the only bearings that I've used that have a truly effective seal.)

DON'T BE SHOCKED

Shocks are next. Take them off the car and use a soft toothbrush to remove as much dust and dirt as possible. Wipe the shaft with a clean rag. When the outside is really clean, test the shocks' operation. The shaft should slide smoothly into and out of the body with even resistance. A "squish" sound means air is in the shock. Rough or uneven action could mean a bent shaft or dirty oil. If the shock or the shaft look oily after a few strokes, the seals are shot. Rebuild if you have a bent shaft or a bad seal.

Even if everything seems OK, I open the shock and look at the oil. It should be clean and clear. If it's black or muddy-looking, it's contaminated and should be replaced. Since dirty oil will find every nook, you have to dump it, completely disassemble the shock and thoroughly clean it. Soak the parts in a mild solvent like mineral spirits, turpentine, or motor spray. Don't use



Disassemble the shocks and clean their bodies out with motor spray. Inspect for worn or damaged parts and add fresh shock oil.

kerosene or gasoline because they can both attack certain types of O-ring. (Gasoline is too dangerous to use for cleaning, anyway.)

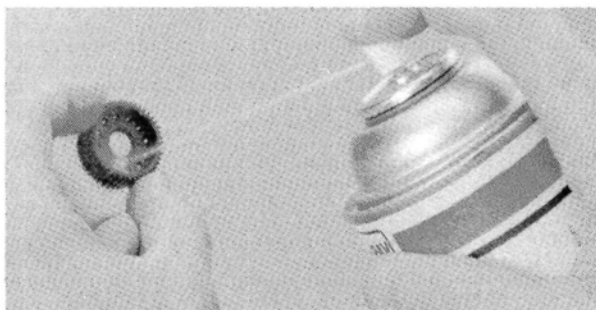
After giving them a good soak, slosh the parts around in clean solvent. Keep changing the solvent until there are no more traces of contaminants in it. Wipe the parts with a clean rag and let them dry overnight. Any solvent left in the shock will break down the oil, and the shocks won't work as well as they should.

GEAR DOWN

Open the transmission and inspect the gears. Teeth should be smooth and have slightly rounded points. If they're worn to a sharp point or are hook-shaped, they should be replaced. Worn or misshaped teeth will waste power and cause damage to other tranny parts. Check the diff assembly for smooth action. Hold it in your hands; it should be very hard to make it slip. (If you have gorilla hands, I'm not talking to you.) Transmission bearings don't get dirty as quickly as wheel bearings, but while you have everything taken apart, go ahead and clean them, too. Reassemble the tranny and set the diff pressure before you put it back in the car.

If your car came with any electronics, inspect them thoroughly, too. Fix or replace any exposed, frayed, or broken wires. See that the motor has the proper capacitors and that the wires are routed safely away from rotating parts. Check the battery connector and make sure that it makes firm contact with your batteries. Tamiya-style connectors can lose their conductivity and rob your car of power if they don't. It isn't unusual for them to get hot enough to melt the plastic.

Be sure your car has a servo-saver. Without one, a servo won't last long on an off-road car or truck. The radio gear should be securely fastened with servo tape, Velcro®, or whatever you want to use. If you didn't buy the



If your tranny doesn't run smoothly, tear it down and check it. It never hurts to take it apart regularly to ensure that it's clean. Look for worn gears, proper diff action and clean bearings/bushings.

radio gear, remove all the old servo tape that held it in.

DON'T KEEP ME IN SUSPENSION

Go over all the ball joints and ensure that they work smoothly, but aren't sloppy. Make sure that the ball can't accidentally pop out of its socket. You can prevent the tie rods from popping off by replacing the ball joints at the first sign of wear. With the shocks and wheels off, make sure that the suspension works smoothly without any binding at the travel extremes.

Replace missing E-clips and tighten all screws and bolts. If you see screws that have worn sockets or slots, replace them. Finally, check the control arms, the shock towers, and the chassis (if it's fiberglass or graphite) for stress cracks, especially around holes. Inspect aluminum tubs for bends and twists.

DON'T GIVE UP

I've seen many full-size restoration jobs stop here. Everything is clean and in perfect working order, but parts are strewn all over the garage. The last step is to put everything back together according to the manufacturer's instructions. Even if your car came with 20 degrees of toe-in, don't assume it's correct. Set the shocks, ride height, toe-in, etc., to factory specifications. Use the factory settings as a basis for your own experiments.

Did you really think that you'd save time by buying a car that had already been put together? Your car may not need as much work as I've described, but after you've driven it a while, it will. To make your car last, keep it clean and repair it the moment anything goes wrong. It's good practice to "restore" it after every race.

*Here's the address of the company mentioned in this article:
Boca Bearings, Suite 2304, 7040 W. Palmetto Park Rd., Boca Raton, FL 33433

by FRANK MASI

H P I 10L



PAN CAR
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CARS ARE statements from their creators. With each new offering, the manufacturer says, "This is how an automobile should be." Am I stuck only with what the automakers dream up? No way! By adding after-market parts and accessories, I can achieve individuality. I say, "This is how I want *my* car to be."

Steve Saleen modifies Mustangs; Ruf tricks out Porsches; AMG turns a mild-mannered Benz into an autobahn screamer; and HPI* makes so many replacement parts and accessories for the Associated* 10L that the HPI 10L merits a track report of its own.

CHASSIS SWAP

The first item to go from the stock 10L was its chassis plate. I used HPI's wide, front-end graphite chassis with its optional arm brace. This chassis is slightly lighter and stronger than Associated's, and it's designed so that the stock 10L front suspension arms are spaced slightly farther apart than usual. The result is

Wide front chassis

Part nos. 6185 (chassis only), 8000 (chassis with arm brace)

Upper brace

Part no. 6190 (for wide front chassis)

Chassis Brace/Adjuster Plate

Part no. 8005 (chassis brace, hardware set for brace and adjuster plate with spacer)

Pro upper brace

Part no. 6005

Aero lower brace

Part no. 6000

Rear hubs

Part nos. 6145 (lightweight left Pro hub), 6150 (right Pro hub)

Wheels and tires

Part nos. 4246 (rear-mounted J-Rubber tires), 4045 (front-mounted J-Rubber tires)

Motor

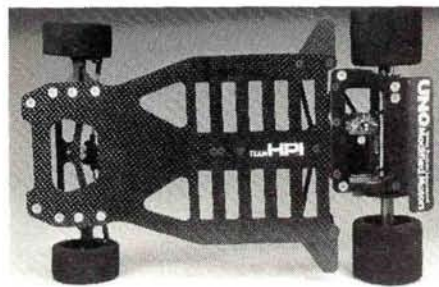
Part no. 1050 (UNO modified 12 Q)

Body

Part no. 7000 (1/10-scale Jaguar XJR-14)

PARTS

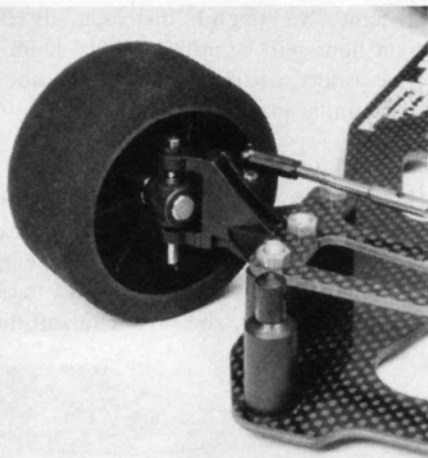
a wider front track and more stability. HPI's arm brace, which is extremely popular with 10L owners, connects the tops of both suspension arms to each other and provides increased rigidity to the entire front suspension. When installed, the brace also bol-



sters the lateral strength of the main chassis.

I've been told by HPI's Ichiro Inokuma that Mike Blackstock used this chassis, combined with a beam-type front end, to take the Top Qualifier spot at the first-ever IFMAR 1/10-Scale On-Road World Championships.

PHOTOS BY WALTER SIDAS



STAY IN-LINE

One of the easiest ways to improve the 10L's steering response is to swap its front axles and steering arms for an in-line set from Bolink* or Team Losi*. In-line steering arms have a pivot axis in the same plane as the axle itself, and this significantly reduces wheel scrub when the car corners.

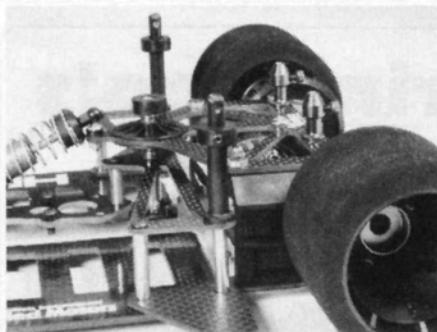
ATTAIN PEAK TWEAK

If you're familiar with the 10L's rear suspension, you know that rear roll rate is controlled by the flexing of the fiberglass T-plate. For tuning, Associated provides two plates, each with a different thickness, but expert racers may wish to adjust rear roll rate in a more subtle fashion. HPI makes a separate adjuster plate that mounts piggy-back

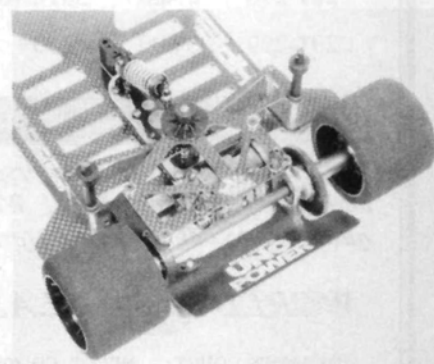
style over the Associated T-plate.

Two sets of tweak-screw holes are in the rear of the adjuster plate and, depending on which set you choose, you can vary the T-plate stiffness and the overall roll angle. This is especially advantageous on slippery tracks because, by limiting the overall roll angle of the T-plate, the rear pod will "straighten" faster, and the car will accelerate more quickly when it exits turns. A small fiberglass plate is provided that's installed directly under the 10L's antenna/shock mount. This plate spaces the shock mount high enough to clear the roll-adjuster plate when it's installed.

You can buy the adjuster plate separately, but it's designed to work with HPI's chassis/damper-tube brace, which, like the brace used on Associated's 12LW, increases the rigidity of the damper tube and makes rear-



pod damping much more consistent. Also, the brace adds significant strength to the rear of the main chassis, and it comes with all the hardware necessary for installation.



BRACE YOURSELF

At first glance, HPI's upper damper plate (it's called the "Pro Upper Brace") looks identical to the stock piece, but closer inspection reveals a series of small holes where the damper washers will touch. According to Ichiro, these holes will "hold" additional silicone damper lube so that most of the lube won't be wiped away during a race. "A good idea at the time," says Ichiro, "but we now feel that Teflon damper tape works better than silicone lube." Apparently, racers prefer to use this tape, but if you still prefer to use silicone lube, HPI's plate is the way to go, and it will work with the tape as well.

10L owners have made HPI's Aero lower brace one of the most popular after-market additions. The brace replaces the stock lower plate of the 10L's rear pod, and its rear portion is "kicked-up" for less aerodynamic drag at high speeds. Also, the kicked-up portion extends on its left side past the car's spur gear for protection during rear-enders.

HEFTY HUBS—NOT!

With the chassis just about as "optioned out" as is possible, the 10L's rear-axle hubs are the last of the stock hardware to be replaced. HPI's Pro hubs come in sizes for narrow oval cars and wider roadcourse cars. The hubs are black-anodized and are lighter than stock for less rotating mass. For roadcourse racing, where quick acceleration out of the turns is essential, I recommend light hubs, but oval racers may wish to forego these in favor of the heavier stock hubs, which give more of a flywheel effect to allow the car to carry more speed through

GET ON THE BUS, GUS

As you can see in the photos, the HPI 10L is a real looker. The question is: how does it work? To find out, I assembled a set of running gear for the car and took to the track.

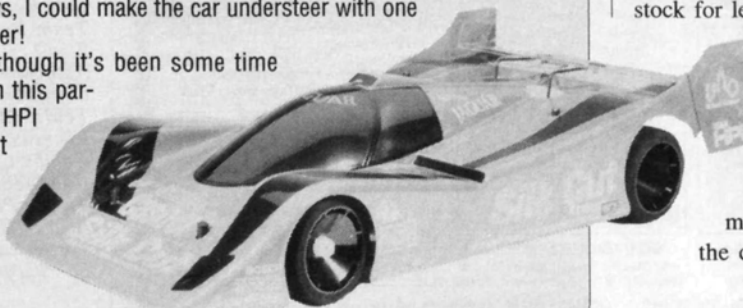
First, I installed a Tekin* Electronics 411G ESC and a TFM-27 mini-receiver. I used a Futaba* S132H high-speed servo for steering control and a set of Trinity* Pushed Panasonic P-170 cells (the same type of cell that Joel used to win the Worlds in Pomona). Finally, I installed the HPI UNO modified 12-turn, quad-wind motor that Ichiro had sent with the car.

On the track (a fairly well-defined roadcourse laid out on an asphalt parking lot), the HPI 10L handled well, but it was almost too fast to be controlled (a 12 quad is a really quick motor). I used some Paragon* Ground Effects III traction compound (a full coating on the rear tires and the inside one third of the fronts) to dial-in the steering.

Once I got the hang of driving with mostly half-throttle (pull the trigger back only on the straight), I could tell that this car had been fairly well set up.

Playing around with the damper adjuster plate made me aware of its usefulness. By rearranging the adjuster's screws, I could make the car understeer with one setting and oversteer with another!

This car was no slouch. Although it's been some time since I've driven a stock 10L on this particular parking lot, I found the HPI car just as easy to drive. It seemed a little quicker through the turns, probably owing to the adjuster plate and the J-Rubber tires. Look good and go fast—what a deal!



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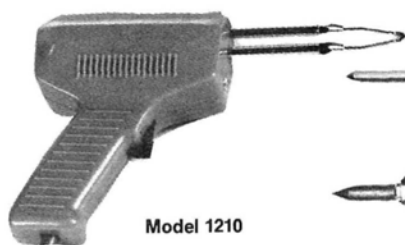
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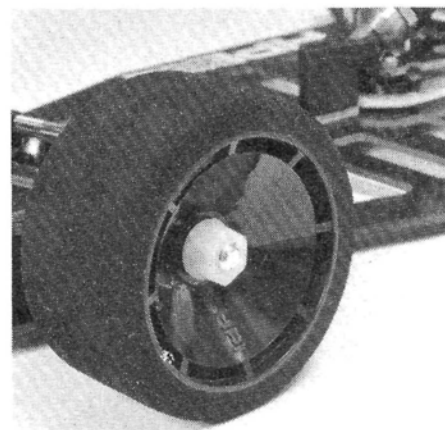


HPI 10L

the turns. I've been told that soon, all HPI right hubs will be drilled so that the diff-drive washer can be pinned to the hubs, so be on the lookout.

STREET MEATS

HPI J-Rubber foam tires mounted on light-weight rims are used up front and in the rear. J-Rubber is a good, all-around compound that works exceptionally well on dusty tracks or on parking lots, and it isn't so soft that



you'll need to change worn tires every heat. They'll last at least 20 to 25 runs on rough pavement.

Do you need all these parts to win races with your 10L? No. I chose to make an entire project car using these accessories to show you some of HPI's product line. These parts are very well-made and well-thought-out; they're not just ways for you to spend money.

All of HPI's products are designed by Akira Kogawa, who used to design cars like Kyosho's Ultima and Burns gas cars, so I guess you could say that he knows his stuff!

If you're like me, you want your R/C cars to stand out from the crowd. What's good about these HPI parts is that they allow you to add individuality and performance to boot.

**Here are the addresses of the companies mentioned in this article:*

HPI, 22600-C Lambert St., Ste. 904, El Toro, CA 92630.

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA.

Team Losi, 13848 Magnolia Ave., Chino, CA 91710.

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

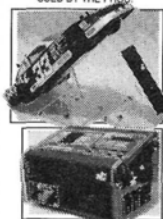
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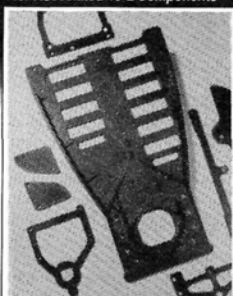


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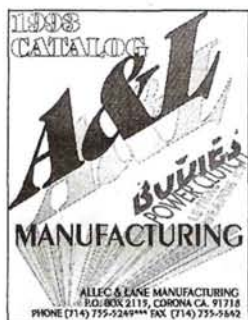
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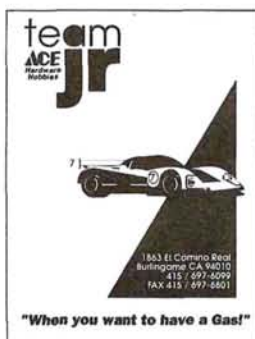
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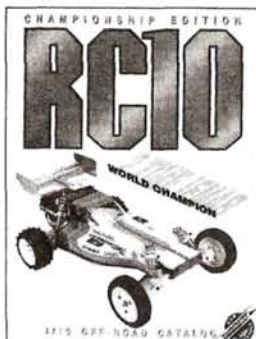
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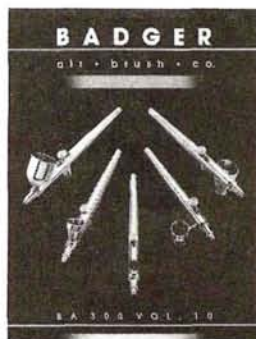
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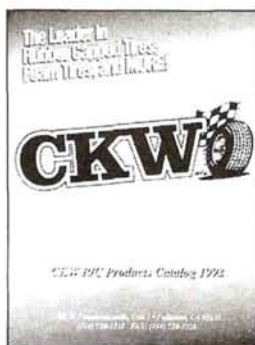
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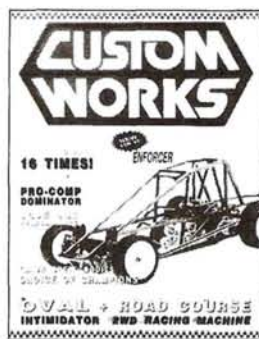
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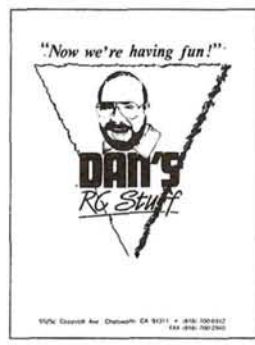
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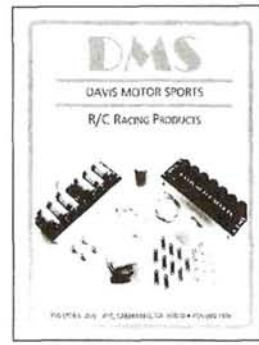
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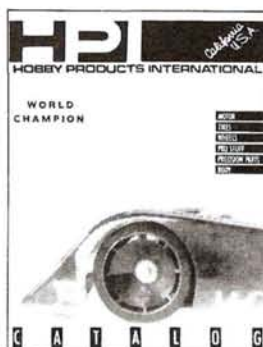
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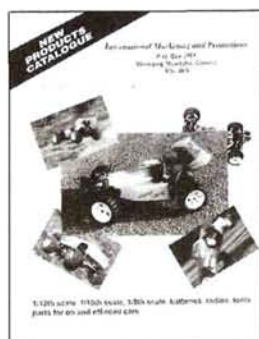
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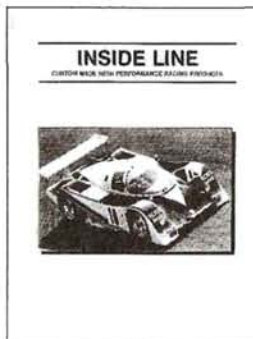
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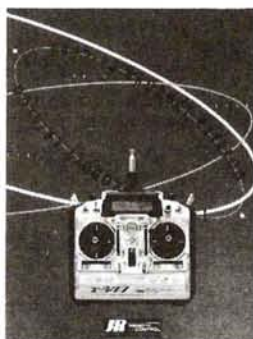
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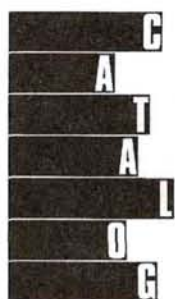
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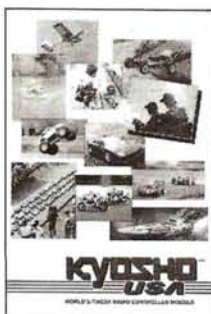
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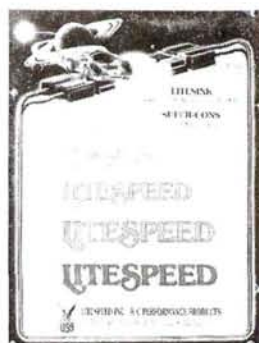
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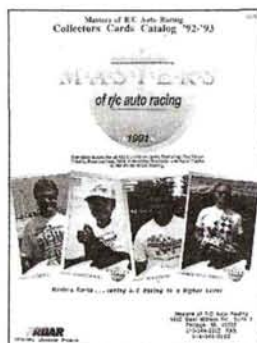
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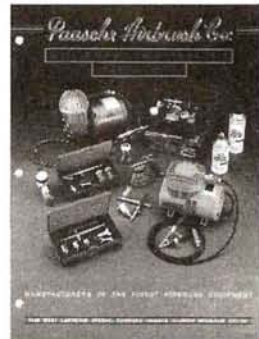
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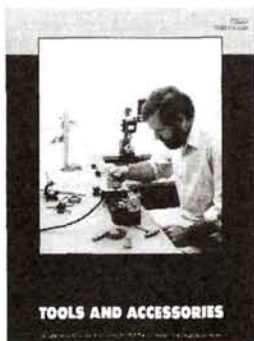
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Producer of the JRX-Pro SE, the LX-T and the Junior T trucks, Team Losi also offers tires, motors, cars, gears and much, much more! For a catalogue and decals, send \$1 to Team Losi Inc., 1655 E. Mission Blvd., Pomona, CA 91766; (714) 465-9400; fax (714) 590-1496.



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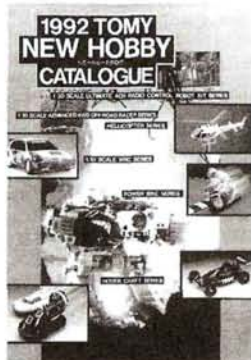
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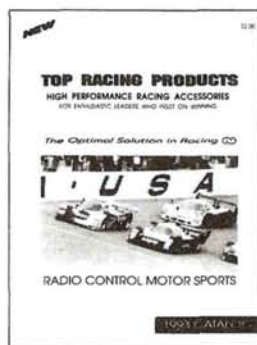
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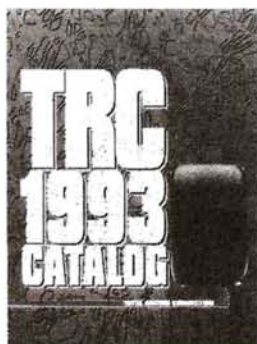
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That's all there is to the 1993 Catalogue Collection, campers. Well, almost. We wanted to include the latest "Hair Club for Men" catalogue, but we couldn't get it away from Chris Chianelli.

When you write to the manufacturers, be sure to mention that you read about their catalogues in Car Action!

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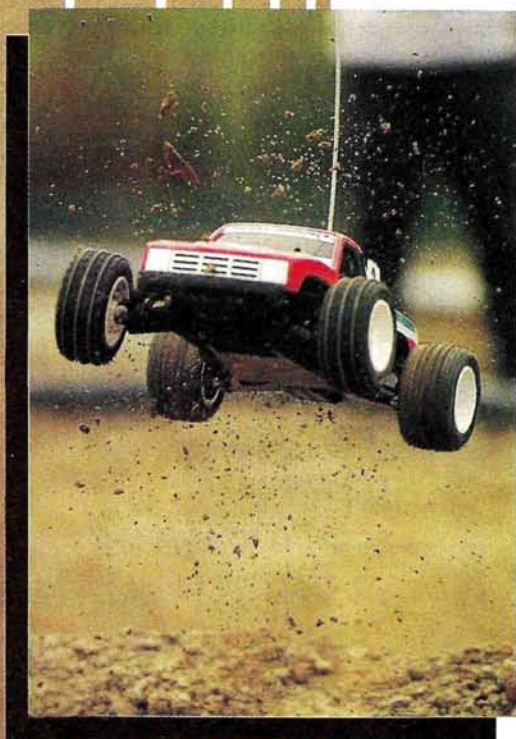
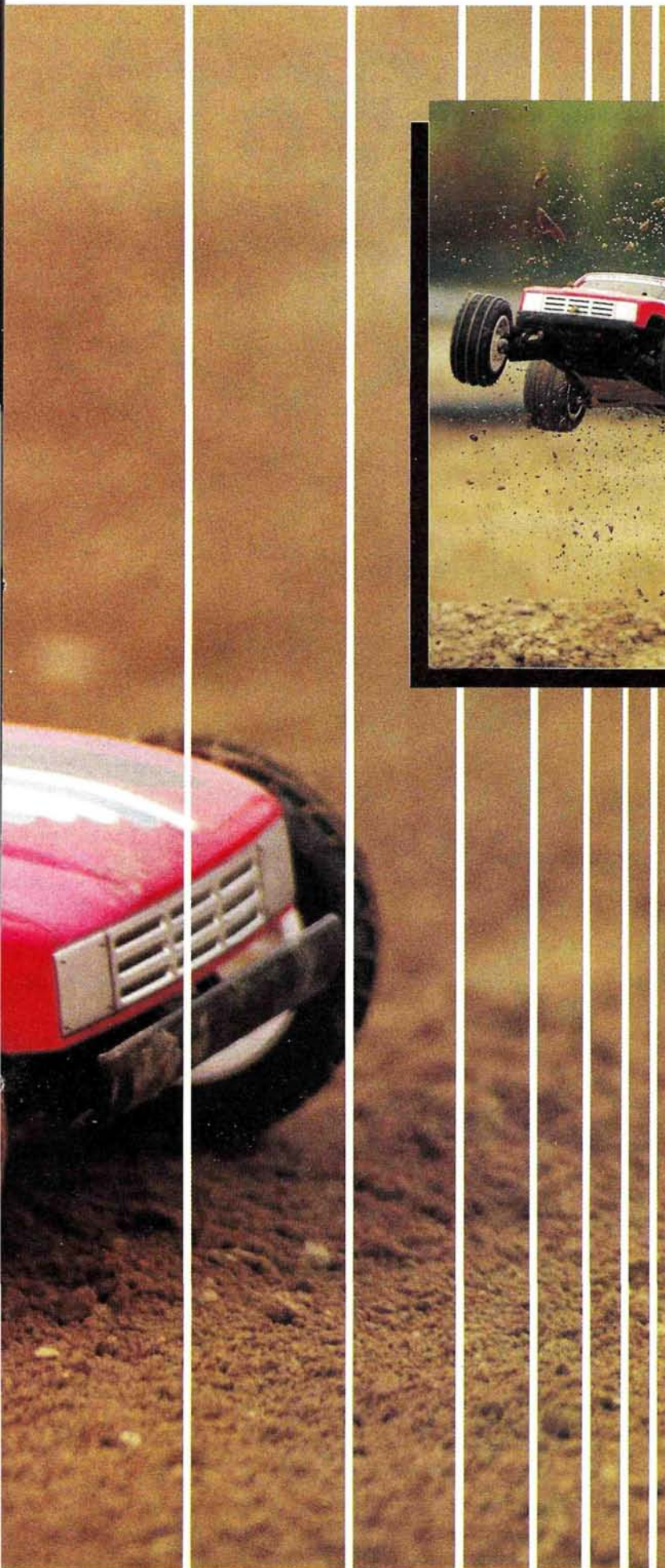
How to Assemble Batteries

Team Losi's Hydra Drive

TAMIYA

STADIUM BLITZER





by JOHN HOWELL

More Truck for your Buck

TAMIYA HAS ALWAYS been an innovative company. Its Blackfoot truck, though not designed for racing, can be credited with starting the entire stadium-truck craze simply because it was the first truck that could manage to navigate an off-road track without leaving a trail of broken parts behind it.

Soon after, a host of manufacturers released purpose-built stadium racing trucks whose performance dwarfed that of the Blackfoot. To remain competitive, Tamiya introduced the King Cab racing truck, and later, the Toyota Hi-Lux, both of which contained racing features such as ball diffs and oil-filled shocks. As good as the King Cab and Hi-Lux were, they still didn't have the "low and mean" look of their American competition. In an effort to address the U.S. market, Tamiya America* has come up with a sure-fire winner for entry-level truck racing enthusiasts—the Stadium Blitzer.

PHOTOS BY JOHN HOWELL

SPECIFICATIONS

Manufacturer	Tamiya
Type	2WD racing truck
Scale	1/10
Price	\$156.20

DIMENSIONS:

Overall length	16 inches
Width	11.5 inches
Wheelbase	10.25 inches
Front track	7.75 inches
Rear track	7.5 inches

WEIGHT:

Gross (with battery)3 pounds, 11.9 ounces

BODY:

Type Mazda stadium truck
Material Polycarbonate

CHASSIS:

Type One-piece tub
Material ABS resin

DRIVE TRAIN:

Primary	Spur gear
Transmission	Gear
Differential	Bevel
Bearings/Bushings	Nylon bushings

SUSPENSION:

Type (f/r)Independent A-arm
with upper control links
Damping (f/r)Oil-filled, coil-over shocks

WHEELS:

Type (f/r)One-piece nylon
Dimensions (DxW) (f/r)2.2x1.75 inches

TIRES:

Front Rib/spike
Rear Spike/X-pattern

ELECTRICS:

Motor	RS 540
Battery	Not included
Speed Controller	Mechanical three-step

OPTIONS TESTED:

Futaba Magnum Junior with a Novak NER-2X AM mini-receiver, a Novak 610RV ESC, Trinity Point Blank Master Motor, Panasonic P-170 SCR batteries.

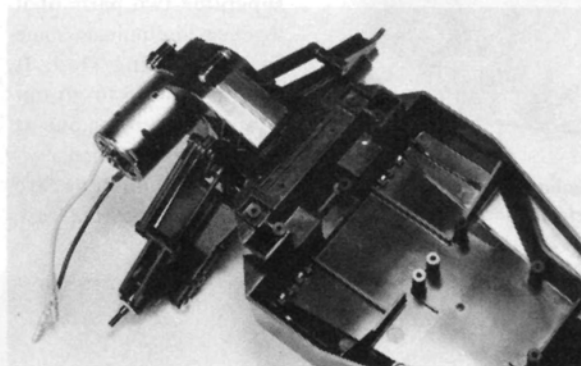
COMMENTS:

The Stadium Blitzer is a well-designed truck that's a step in the right direction toward producing a full-bore race truck. Although the Blitzer is labeled an "entry-level" race truck, I couldn't help but think that with a few hop-ups, *this truck could be in the winners' circle* at most local tracks. As a first truck for a beginner, you can't go wrong with this one. It can be whatever you want it to be—a backyard conqueror or a track tamer—or both!

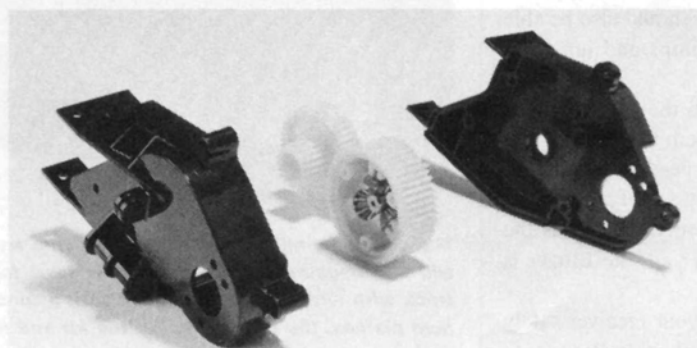


ACHTÜNG BLITZER

The Stadium Blitzer has an extremely durable injection-molded ABS resin tub-chassis, front and rear independent double-wishbone suspension arms with coil-over, oil-filled shocks, combination pin/X-pattern tires; and a highly detailed, lightweight polycarbonate body. It may be an entry-level



Adding the gearbox to the tub chassis is as simple as tightening four screws. The 540RS motor is fine for beginners, but for those who want a little more power, bolt in a stock or modified motor and let the Blitzer fly.



The bevel-gear diff is extremely durable and very quiet. Plastic bushings are included; for better performance, you might want to replace them with high-quality ball-bearings.

truck, but Tamiya pulled out all the stops when they designed it.

The first thing I noticed when I opened the box was that the usual hi-zoot packaging was missing! Gone are the easily identifiable bags. To streamline operations and cut the overall price of the kit, Tamiya has done away with the old style of packaging. I didn't have any problems finding parts, which were all marked on the plastic trees, and there were a few parts bags—but I missed the efficiency of the old packaging.

To build the Blitzer, you'll need your no. 1 and 2 Phillips screwdrivers and a pair of needle-nose pliers. You'll also need a sharp hobby or X-Acto knife to remove the parts from the trees. Spread the parts out and organize them; as soon as you have everything ready, assemble the gearbox.

The heart of the transmission is a durable bevel-gear differential setup. The transmission housing and the spur gear come with economical plastic bushings, but for the best performance, you really should replace them with high-quality ball bearings when they wear out. Don't forget to add grease

to the large and small bevel gears as well as to the teeth of the spur gear and the diff gear. (It helps the gears to mesh smoothly during break-in.) The gears themselves look very durable, and they should be able to withstand quite a bit of abuse.

After I had assembled the gear-

STADIUM BLITZER

box, I put the kit's 13-tooth pinion on the supplied 540 motor. I put the motor in the gearbox and ran some juice through it to see if everything worked properly. It sounded fairly smooth, so I pushed on; so far, so good.

SUSPENSION SIMPLIFICATION

Next, I built the rear suspension arms and the dogbone assembly. Here again, Tamiya uses bushings that you should replace with bearings after they've worn out.

One minor gripe: when you put the gear joints into the transmission housing, you have to jiggle the housing and slide the diff

one of Novak's* NER-2X AM mini-receivers along with a Futaba* Magnum Junior radio.

If you plan to put your receiver underneath the speed-controller tray, plug in your servo connectors *before* you attach the tray. I didn't. I had the tray on before I realized that I hadn't plugged in the servos, so I had to take it off and plug

them in. No big deal, but two friends from work who were watching me build the truck had a few laughs because of my blunder.

After the laughter had subsided, I worked on the steering servo and the steering shafts. The included servo-saver is totally lame! It's very flimsy and weak. I eventually had to superglue two parts of it together to eliminate some of the steering slop. It would be wise to go out and get a sturdier one at your local hobby shop.

The tire designs are interesting, to say the least.

on the fronts. It's an interesting tread idea; we'll have to see how it works on the track.

When you have everything together, add the front and rear end to the tub chassis, then work on your shocks.

SHOCK IT TO ME

The kit comes with one-, two- and three-hole shock pistons. It's best to start with the two-hole pistons. From there, you can experiment with the others to vary damping. Be careful not to leave burrs or make nicks in the edges of the pistons when you trim them off the tree. If you damage the pistons, your shock action will suffer.

Don't forget to oil the shock shaft before you put it through the shock body. If you don't, you could damage the O-rings.

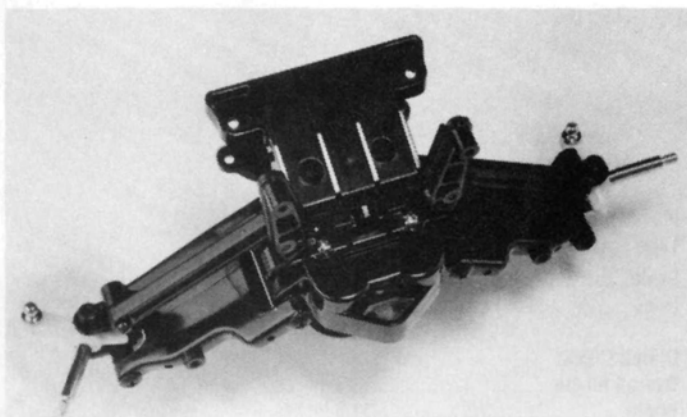
I assembled the shocks and attached them to the truck. I didn't put any spring spacers on the shock body because I wanted to see how it would run without them. I took care of the miscellaneous tuning odds and ends, and I was ready for action.

TRACK TESTING

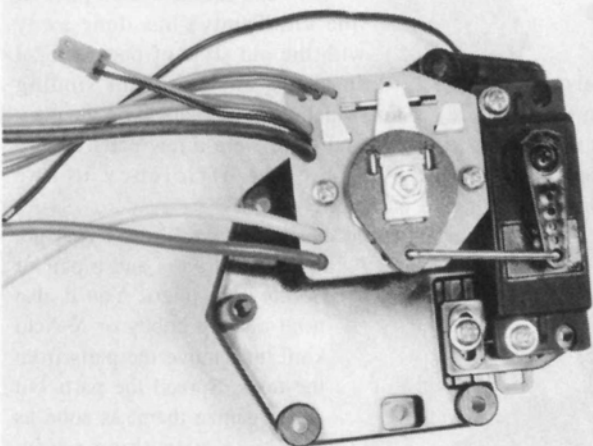
I sent the body to Richard Muise of Motion Graphics* for an ultra-trick paint job, and when it was returned, I wasn't disappointed. Richard sure knows his stuff! With my newly completed truck and my controller in hand, it was time to hit the track.

I ran the Blitzer totally stock. After a few laps, I was impressed. I'm used to high-tech, off-road machinery, and although it isn't touted as a full-bore race truck, I was pleased with the Blitzer's performance. It was a blast to run—nimble, and it handled well. The suspension action was smooth. I

remembered that I hadn't added the spring tension spacers, and I was still running the



The front end goes together easily, and the suspension arms didn't bind at all throughout their range of travel.



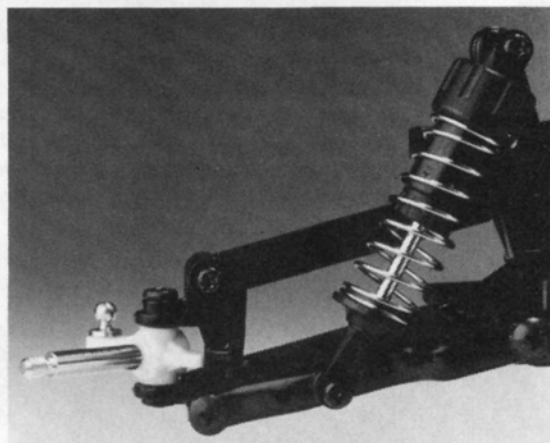
Like the motor, the stock three-step speed controller is fine for beginners, but if you want more performance, upgrade to an ESC.

gear around to match it with the hole in the housing. Other than that, building the rear suspension goes well. The arms look sturdy and should be able to withstand any obstacle your local track can throw their way.

Assembling the front arms is next. They're made of the same durable material as the rear arms, and they should also be able to take the largest of bumps and jumps in stride.

After I had assembled the front suspension arms and fastened them to the front end, I attacked the three-step speed controller setup. Although I'm not a big fan of mechanical speed controllers, the Tamiya unit does the job adequately—and, after all, the Blitzer is an entry-level truck.

There's room to tuck your receiver safely away underneath the speed controller tray to protect it from debris, but for the best results, and to reduce the chance of glitching, mount the receiver on the rear shock tower. I used



The coil-over, oil-filled shocks that come with the kit will suit beginners. I ran the Blitzer on a fairly rough track with and without the shock spring spacers. Two-hole pistons, the oil included in the kit and the largest spring spacer yield the best results.

There's a combination spike/X-pattern on the rears, and a combination spike/rib pattern

stock 540 and the three-step speed controller, so I took it back to my workshop to add the spacers and a few other items.

With the Blitzer back on my workbench and the spacers on the shocks, I decided to boost the performance a little, so I added a Trinity* Point Blank Master motor and a Panasonic P-170 SCR battery pack.

I don't care much for mechanical speed controllers, so I replaced it with a Novak 610RV. The 610RV is a great unit that comes with reverse (for those of us who need it now and then). For beginners, a three-step controller will suffice, but for those who want more performance, an ESC is a step in the right direction.

With the hotter motor and ESC installed, the Blitzer reared up and attacked the track with a vengeance. With the addition of the shock spacers, I noticed that it didn't bot-

"I'm used to high-tech, off-road machinery, and although it isn't touted as a full-bore race truck, I was pleased with the Blitzer's performance."

tom-out through the rhythm section of the track, and the chassis didn't slap the ground when it landed off the larger jumps.

The Blitzer is stable through the rough, and it handles all that a beginner can throw its way. After-market companies will undoubtedly offer myriad hop-up parts. If you're a beginner who wants to get into racing relatively cheaply, or if you just want a good backyard burner, you'll love this truck. It offers the reliability that's synonymous with the Tamiya name. The only things that could have made this truck any better are a better servo-saver and the addition of a ball diff, but then, how entry-level would it really have been? Hey, after-market companies, are you listening?

**Here are the addresses of the companies mentioned in this article:*

Tamiya America Inc., 101 Columbia, Aliso Viejo, CA 92656.

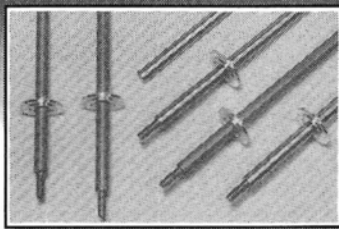
Novak Electronics Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707.

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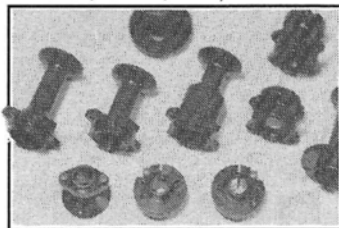
Motion Graphics, 2645 Robert Arthur Rd., Westminster, MD, 21157.

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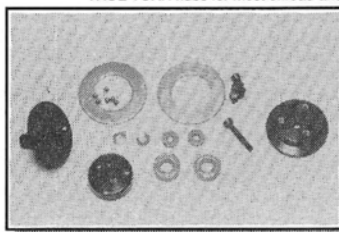
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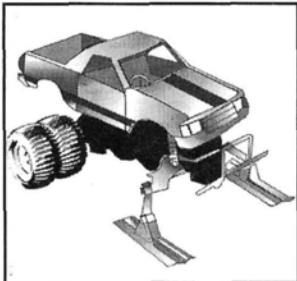
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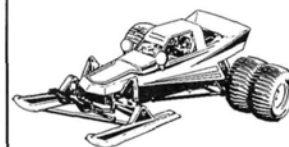
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SCOPING OUT

(Continued from page 26)

justed the neutral trim pot until the wheels stopped turning and the pulse-checking LED shone on brightly. This pot is a little touchy, and I had to adjust it carefully to hit neutral right on the nose. I found that the final adjustment was best made with the throttle-trim setting on the transmitter. After I had set the neutral pot correctly, I could make my car go forward and backward with the throttle-trim pot. I then pulled the trigger to the 80- to 90-percent point and adjusted the full-speed pot

until the pulse-checking LED came on fully. While I'm on the subject of adjusting, the supplied screwdriver is a dandy and the pots are well-centered under the holes in the case, so everything is easy to adjust.

I drove the Sideways across my yard and up and down the street in front of my house. (I live on a dead-end street with no traffic.) It only took a minute for me to realize that the 610R is a smooth, hot performer. It was great to be able to back up whenever my meager driving skills stuck me under a parked car or against the curb.

Next, I dialed-in maximum reverse delay and pushed the trigger to full reverse. While holding the trigger in this position, I slowly turned the reverse control clockwise until reverse kicked in. (This gives about a 5-second delay before reverse is activated.) In this mode, the car had a screaming forward and strong brakes. This let me *tear* down the road, *slam* on the brakes and execute a sliding 180-degree turn. Now *that's* fun! Of course, if I got stuck, I could still hold the trigger in reverse for 5 seconds, and the car would back right up.

(Continued on page 144)

NEW



TXR-002

1/20 Scale Ultimate 4CH R/C Robot Kit

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This is a full-dress 4-ch RC model that enables all actions to be remotely controlled.

Technical Specification

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Total Height	135 mm
Total Width	183 mm
Total Weight	550 g
Tread	60 mm
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Control System	2 micro servos & 2 ESCs
Power Source	GN120mAh (7.2V) NiCd Pack
Radio System	27MHz 4-ch digital prop.

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SCOPING OUT

(Continued from page 142)

At the end of the run, I immediately checked the 610R's temperature. The motor and battery were hot enough to cook eggs, but the heat sinks were only a little warm. With a little cooling air, the 610R could probably handle the twin-motor setup of a monster truck. (The instruction book recommends that a twin-motor setup be limited to 16-turn motors and 7-cell packs.)

As with most new Tekin products, it was exciting to test the 610R. If you're in the market for a reversing speed controller this one is really *hot*. Just think about it: this space-age unit will replace the existing servo, the resistor, the wiper switch, the separate receiver battery pack and the maze of wire that's associated with mechanical speed controllers in most buggies and trucks. And if this isn't enough, the 610R performs much better than all the junk that it replaces—well enough to be a candidate for stock-class racing at your local track. Some racing rules prohibit the use of reverse during a race. No problem! You can completely dial-out the 610R's reverse and make it a forward-only-with-brake ESC.

I ran into Bruce Potter, a racer at our local track, running a brand-new 610R in his RC10T,

and he bragged that it's the smoothest, best-running speed controller that he has ever owned. I have to agree: it's one fine speed controller.

**Here are the addresses of the companies mentioned in this article:*

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

Litespeed, P.O. Box 4765, Spokane, WA 99202.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

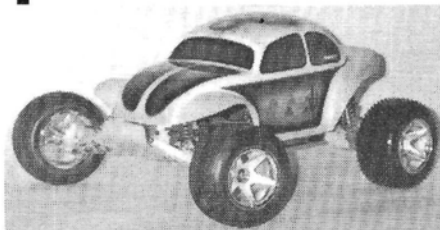
NITRO NEWS

(Continued from page 34)

bodies, including the Elfin and the Lola, have side dams to keep the air on top of the body. Also, those small ridges on the side of your favorite racing body aren't there just to aggravate you during painting. They actually help to prevent air from rolling off the sides of the body before it reaches the rear spoiler. Large side dams also improve high-speed stability in the same way that fins stabilize a plane or a rocket.

(Continued on page 175)

DAHM'S RACING BODIES



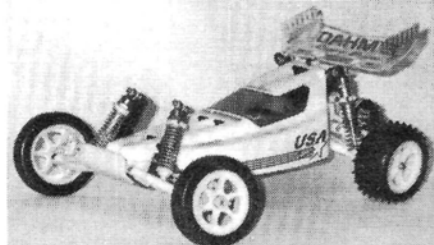
D080 BUGGSY™ Racing Bug Body for the RC10T - NORRCA Approved!



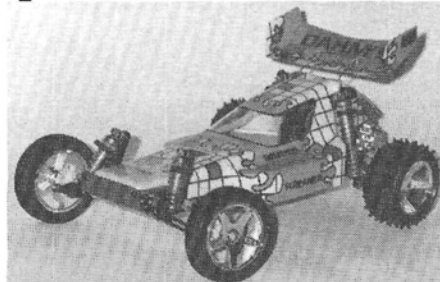
D198 COMMANDO XL™ Fits Super Low on the LXT, RC10T, Blue Eagle, Outlaw Ultima, and Outlaw Rampage! Includes Spoiler.



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TRUCK NATS ATTACK



MARK PAVIDIS

NEWS FLASH! THIS JUST IN: Team Losi's Kyle Reed and Associated's Mark Pavidis won big at the '92 Truck Nats in Savannah, GA; Kyle took the overall stock win, and Pavidis conquered the modified division. Other front-runners included Peak Performance's Rick Hohwart and Traxxas's

Rick Vehlow, who TQ'ed in mod with his Blue Eagle LS.

We saw many hot new items at the Nats from both Losi and Associated. Associated debuted its suspension components, which consist of new shock towers and suspension arms. Losi dropped the bomb though, and stunned us with their—oops, hold on, our phone is ringing.

Sorry folks! That was Pops from Team Losi, and he gave us the ixnay on telling you about their prototype ??? until next month. Trust us, though, it will be worth the wait. It's hot!



KYLE REED

Mike Dunn accidentally left a prototype Race Prep stock motor on the table in his pit area as we were walking past. Sorry Mike, the towel you had over it didn't cut it. The new motor features a narrow split rotor, sealed bushings and airflow ports. It will be available in 24- and 38-degree timing. (An air filter is an optional accessory). The motor retails for \$28 and is manufactured right here in the USA. Early reports from a few top drivers who have tested it say the thing really smokes.

There's more where this came from, so don't miss the next issue for an in-depth look at the '92 Truck Nats.



Race Prep's new stock motor.



OFF-ROAD PRO DRIVING TIPS HOW TO "WIN" PRACTICE

by Mike Dunn

Although there isn't a trophy for winning practice, doing well during your practice sessions helps to dial you in for the event and builds your confidence, too.

If you concentrate on your practice, it can pay off in a big way. Have a plan of attack. (It should consist of a lot more than just driving your car around and around the track.) Show up with everything prepared. Be organized, never give up and, most important, never say you're "dialed."

● **Keep your eyes open.** From the time you get to the track, watch the surface and note how it changes. You never know what condition the track will be in during your heat races, but you can be prepared. Generally, the morning and evening hours are cooler; this means that your suspension will be stiffer and yield more traction, so you should be able to use more horsepower. More traction also means less run time. As the day wears on, the track will get harder, drier and hotter. To compensate for this, change your tires (of course!), use a milder motor and switch to a slightly thicker suspension fluid. Don't count out your earlier setup. It's always good to remember that the track will be faster during the early portions of qualifying. Be ready for it and capitalize!

● **Good starts.** Because off-road races are only four minutes long, a good start is very important to a win. Some racers make the mistake of never practicing starts. Start in the back of the pack at local club races. This will help you to polish your driving on those critical first few laps; it will also improve your driving

technique through traffic. Drive at about half-throttle until you find an opening. Quickly glance at the first turn as the first few cars enter it. This can help you find an opening or avoid a pile-up. Each start is different, so there's no such thing as too much practice.

● **Where do I stand?** Many drivers take their choice of position on the drivers' stand too lightly. Here are a few things to remember when you decide where to stand. The better you can see the track, the fewer mistakes you'll make. Most tracks have a straightaway nearest the drivers' stand. Looking directly down on a car, it's difficult to see the surrounding obstacles. Keeping that in mind, it's better to look directly down on the car as it passes through the slow-speed section of the straight. This will give you a broader view of it in the high-speed section, in which many costly mistakes are made. You'll be able to see more of the track in front of your car and you'll be less likely to make mistakes. Cutting a corner too tight is one of the most common mistakes. If your car travels directly toward you when it enters a turn, it's hard to judge when your car has passed the "apex." If you move to one side on the drivers' stand, the apex will be clearer. Always try to pick a spot on the stand that will eliminate as many blind areas as possible.

● **One change at a time.** As you test different setups during practice, never make more than one change at a time. Even if the changes seem to have nothing in common, they can affect one another. Gearing can affect traction, so don't change your tires when you change the gearing. The best way to test changes is in back-to-back runs. If you want to test a new motor, pull your car off the track, change the motor, put a fresh battery in and go directly back onto the track. This will give you the best idea of the difference between two motors because the track is in virtually the same condition for both runs. Another way to test is to have a trackside buddy change tires or adjust your suspension during one practice session. This is the ultimate!

● **Challenge yourself.** You may be the fastest driver at your local track, but when the big race comes to town, you'll find that you're only average. Why? Many racers run the same track all the time and become very good at it. It may not be completely your fault that the track stays the same and new competition never shows up, but you can still improve. Run your track in the opposite direction. Use tires that aren't suited to the track conditions to improve your driving techniques in bad track conditions. Start at the back of the pack, or even a half a lap down, and play catch-up through traffic. Drive from different places on the stand, or even stand at a different part of the track on a ladder or a bucket. You could even help out some other local drivers and create some competition. Someday, it might all pay off—and you'll be the champion posing in *Car Action*. ■



"Nitro Thunder" rolled through the State Fair Grounds in Albuquerque, NM, on September 4, 5 and 6. What's "Nitro Thunder" you ask? It's more than 200 1/8-scale 2WD and 4WD gas cars pounding the pavement in the biggest R/C on-road

GAS BLAST!

gas race in history. Top runners in 2WD included Associated's Curtis Hustings, Mark Miranda and Sean Cochran. In 4WD, Mike Swauger dominated, with Ralph Burch Jr. and Sal DiFazio also putting in some hot laps.

The program included the *R/C Car Action* Shootout, which consisted of 20 newly designed 1/10-scale nitro-powered cars. Congratulations go to Joaquin Desoto, Michael Salven and Frank Calandra for turning in some awesome performances. Hopefully, the 1/10-scale gas class will continue to grow. There's no doubt that 1/8-scale on-road gas is growing in leaps and bounds. So, are you ready to take the challenge?

**Norm for
President—
NOT!**



ROAR

OFF-ROAD NATS

by FRANK MASI

OFF-ROAD IS STILL the most popular segment of the R/C car hobby. Perhaps this is because off-road cars can be driven over virtually any surface; maybe it's because people like to send their 1/10-scale missiles over the largest jumps they can find to achieve maximum "air time." Whatever the reason, off-road is the mainstay of the hobby.

It's no surprise, then, that the most heavily attended R/C event has always been the ROAR Off-Road Nationals. Sure, there are other national races, but for an R/C off-road racer, winning the ROAR Nats is like taking the checkered flag at Indy—we're talking serious bragging rights!



At a race such as this one, the factory teams pull out all the stops. If you stroll through the pit area, you'll see the newest cars, parts and prototype equipment.

Racers from all over the country travel to compete at the Nats. Some have grandiose visions of A-Main wins, others have a more realistic intent: to watch the best drivers in the world, and to perhaps catch someone like Kyle Reed or Cliff Lett in the pits for a bench racing session. More important, they come to have fun with others who share the same interests, and to race!

The biggest names in R/C off-road racing were in Texas on the weekend of August 8th and 9th, and they were gunning for the top spots in their classes. Because each driver was allowed to enter only two of the three classes (2WD stock and modified, and 4WD modified), most chose to run 2WD and 4WD modified. There were two rounds of qualifying planned for Friday, followed by two additional rounds on Saturday, with the main events on Sunday.

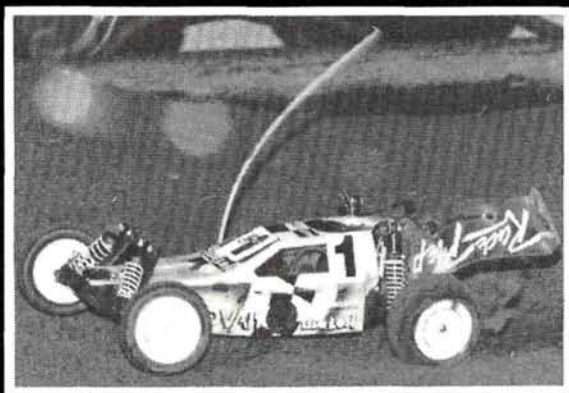
QUALIFYING

The qualifying rounds were hot and heavy; more than 500 racers vied in the dog-eat-dog (eat hot dog) competition for the coveted A-Main slots.

In the 2WD Stock class, last year's champion, Kyle Reed, set the early pace with his JRX-Pro SE. Rick Vehlow, however, had other ideas, as he thrilled the Texas Traxxas fans by piloting his TRX-1 to the pole in the final round. Team Associated's Matt "no, I'm not Mark" Francis kept his Team Car in the running by

qualifying third.

In the 2WD Modified class, the top position changed at least twice with every round. Cliff Lett was the top man during the first round, until he was bumped by his teammate Matt Francis. Round two saw Jack Johnson and J.D. Beckwith duke it out for the top spot. Throughout the heat, Johnson



After a quick tuck and roll, Mike Dunn had a few problems with the wing on his car.

set a pace with his Trinity-powered JRX-Pro SE that would shatter the existing T.Q., but Beckwith was in a position to beat it. In the end, Johnson managed to set the new fast time by more than three seconds; Beckwith followed only a few tenths of a second behind. After the final round, Johnson's time held, as did Beckwith's. Rick Vehlow, after being credited by the officials (see sidebar), took the third slot.

Just when I thought that cars couldn't get any faster, the 4WD Modifieds took to the track. From the start, Mark Pavidis battled with Brian Kinwald. I think they traded the T.Q. position at least twice! After the dust had settled and the final round was history, Pavidis was on top with Kinwald hot on his heels. Jack "Bo Back" Johnson put his Trinity-powered Kyosho Lazer in third.

THE MAINS, MAN

In keeping with the IFMAR for-

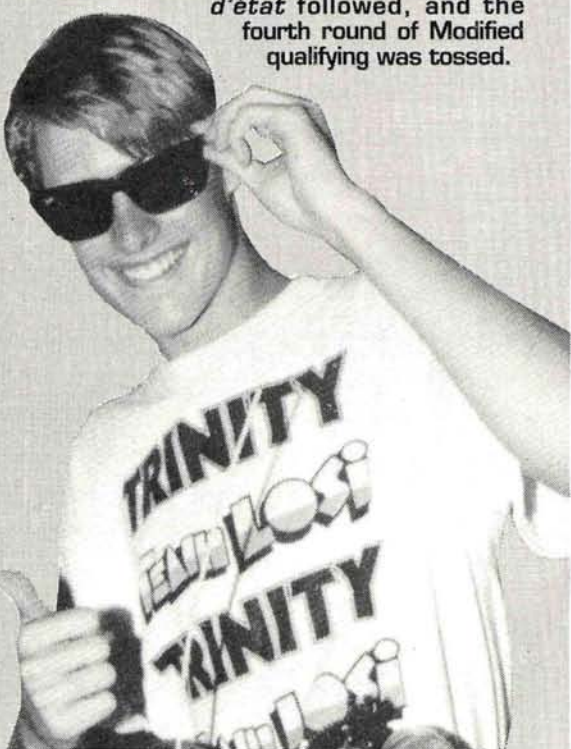
Oops!

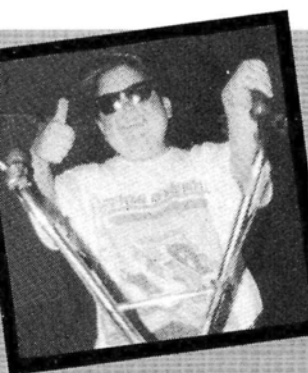
The computer scoring system (dubbed the "Norm 5000") caused problems throughout the first two rounds of qualifying. Apparently, track officials were using the older AMB system, and the new, high-frequency electronic speed controllers were interfering with its operation. (Newer transponders are designed to work with high-frequency ESCs). During many of the heats, racers had to be hand-counted—a necessity, but very inaccurate. A good example of a counting-system glitch: Rick Vehlow was on a definite top-three qualifying run in the 2WD Modified class. When he crossed the line, the officials announced that he was finished. (An IFMAR-type program, where each car is timed separately was in use.) Vehlow pulled off the track, only to be told to "keep going," as a mistake had been made with the clock.

In an effort to be fair, the officials adjusted Vehlow's time, and the time of his last lap was determined by averaging his prior times. Was this really fair? No. Maybe Vehlow would have crashed if he had been allowed to complete his final lap; maybe he would have turned in a killer last lap and qualified even higher—we'll never know!

To add insult to injury, the Norm 5000 "bit the big one" between the fourth qualifying round of Stock and the fourth round of Modified. In the hour or so that it took to get a back-up system, the track workers decided to completely groom the track. Uh oh! In an effort to make the track conditions the same for all the racers, officials had decided beforehand not to maintain the track; even if the track severely "went away," it would be the same for everyone.

As soon as the fourth Modified round was underway, the effect of the track maintenance caused problems: the winners of virtually every heat were setting new top-qualifying paces! Basically, a near *coup d'état* followed, and the fourth round of Modified qualifying was tossed.





Brian Kinwald is one of R/C racing's most promising drivers. Brian's sure to be found in the A-Main anywhere he competes. Car Action's "Doogie" Howell caught up with Brian during of the the heat breaks:

You were the runner-up in both 2WD and 4WD Modified last year. Are you out for revenge in '92?

Well, hopefully in 4WD. Last year's 2WD was basically my fault. I had a chance and crashed. In

A MAN ON A MISSION

4WD last year, I was in the lead, but I was taken out.

How did you prepare yourself for this race?

I practiced a lot, and worked on my cars a lot.

How many hours per week do you race?

I usually race about three times a week.

Who are your toughest competitors?

Everybody in the A-Main is fast, so everybody basically has a chance of winning. I can't think of one particular driver who would have an advantage.

What's your opinion of how the race is being run?

Terrible. This is about the worst race I've ever been to.

How do you rate the track, on a scale of one to 10?

Probably about a three or a four.

Is this a hard track to drive?

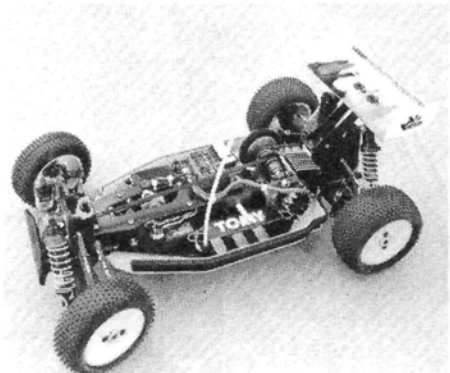
In a way it is. It's the same for everybody, but it's not an easy track.

With your 4WD run you've qualified for the '93 Worlds. How do you think you'll do in England?

Hopefully pretty well. Every time I've been there, I've won. I'd like to do well.

mat, each A-Main was run three times; the two best finishes determined the final standings. Most racers agree that this format is the most fair, because the most consistent drivers come out on top.

The first 2WD Stock A-Main looked like a repeat of last year's. Kyle Reed shot out to the lead and remained unflappable as he held off charges by both Rick Vehlow and Matt Francis. Stock Main number two looked as if it would be Reed's once again,



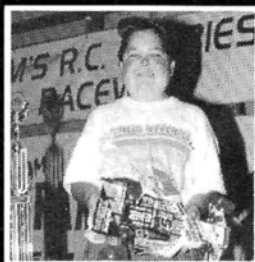
One racer showed up at Norm's with a hi-zoot Tomy Intruder. He received quite a few odd looks—until he showed them how quickly he could get around the track!

PHOTOS BY JOHN HOWELL



2WD STOCK

Fin	Qual	Name	Chassis	Motor	ESC	Radio	Batteries
1.	1.	Rick Vehlow	Traxxas TRX-1		Novak M1c	Airtronics	Pack Shoppe
2.	4.	Bryan Peterson	Losi Pro SE	n	Novak M5	Futaba	Trinity Pushed
3.	3.	Matt Francis	Associated Team Car	a	Novak M1c	Airtronics	Reedy SCRC
4.	5.	Mike Dunn	Team Losi Pro SE	n	Novak M1	KO Propo	Trinity Pushed
5.	7.	John Walters	Traxxas TRX-1	d	Tekin	Futaba	Team Orion
6.	2.	Kyle Reed	Team Losi Pro SE	o	Novak M5	JR R-756	Trinity Pushed
7.	9.	Randy Kato	Associated Team Car	u	Novak M1c	Airtronics	Reedy
8.	8.	Joe Moretini	Team Losi Pro SE	t	Novak M5	Futaba	Team Orion
9.	10.	Cory Williams	Traxxas TRX-1		Novak M5	Airtronics	Team Floyd
10.	6.	Derek Buster	Associated Team Car		B&R	Novak	KO



2WD MODIFIED

Fin	Qual	Name	Chassis	Motor	ESC	Radio	Batteries
1.	5.	Brian Kinwald	Associated RC10	Reedy Mr. S	Novak HPC	Airtronics	Reedy SCRC
2.	7.	Mark Francis	Associated RC10	Reedy Mr. S	Novak M1c	Airtronics	Reedy SCR
3.	1.	Jack Johnson	Losi Pro SE	Trinity Kevin-Kevin	Novak M5	JR R-756	Trinity Pushed
4.	2.	J.D. Beckwith	Associated RC10	Reedy Mr. O	Novak MXc	Airtronics	Reedy 1400
5.	4.	Bryan Peterson	Losi Pro SE	Trinity Champ	Novak M5	Futaba	Trinity Pushed
6.	10.	Jay Halsey	Losi Pro SE	Trinity	Novak M5	Airtronics	Trinity
7.	6.	Matt Francis	Associated Team Car	Reedy Mr. S	Novak M1c	Airtronics	Reedy SCRC
8.	8.	Cliff Lett	Associated Team Car	Reedy Mr. S	Novak HPC	Airtronics	Reedy SCRC
9.	3.	Rick Vehlow	Traxxas TRX-1	Peak Perf	Novak M1c	Airtronics	Pack Shoppe
10.	9.	Daren Westman	Associated Team Car	Reedy Mr. Y	Novak M5	KO Propo	Reedy



4WD MODIFIED

Fin	Qual	Name	Chassis	Motor	ESC	Radio	Batteries
1.	4.	J.D. Beckwith	Yokomo YZ-10	Reedy Mr. M	Novak HPC	Airtronics	Reedy 1400
2.	1.	Mark Pavidis	Wally	Reedy Mr. S	Novak MXc	Airtronics	Reedy SCRC
3.	6.	Jay Halsey	Schumacher Boss Cat	Trinity	Novak M5	Airtronics	Trinity
4.	9.	Mark Francis	Kyosho Lazer ZX-R	Reedy Mr. M	Novak MXc	Airtronics	Reedy 1700
5.	3.	Jack Johnson	Kyosho Lazer ZX-R	Trinity Kevin-Kevin	Novak MXc	JR R-756	Trinity Pushed
6.	10.	Cliff Lett	Yokomo YZ-10	Reedy Mr. S	Novak HPC	Airtronics	Reedy SCRC
7.	5.	Gil Losi Jr.	Kyosho Lazer ZX-R	Trinity	Novak	Futaba	Trinity SCRC
8.	8.	Matt Ledger	Kyosho Lazer ZX-R	Reedy Mr. O	Novak MXc	KO Propo	Reedy SCRC
9.	2.	Brian Kinwald	Yokomo YZ-10	Reedy Mr. O	Novak MXc	Airtronics	Reedy SCRC
10.	7.	Jonathan Morgan	Schumacher Boss Cat	Reedy Mr. M	Novak MXc	Airtronics	Reedy 1700

until he stuffed a board on lap six and popped a tie rod, allowing Vehlow's Traxxas car to skate to an easy victory. Vehlow took the third A-Main to win the National title decisively over Team Losi's Bryan Peterson. Matt Francis proved his consistency by finishing third overall.

**Have you ever watched
a car during a race and
thought to yourself,
"Man, that car is dialed!"**

The first 2WD Modified A-Main was simply amazing! At the buzzer, Jack Johnson shot out from the number one slot to take an early lead. From fifth position, Brian Kinwald reeled Johnson in. By the 2½-minute mark, Kinwald's Team Car had pulled up to Johnson's rear bumper. Johnson managed to hold Kinwald off for several laps, but Brian put a move on Jack that made the crowd remember why they were here! This was truly racing at its best, as Kinwald crossed the line in first, followed by Johnson and Team Associated's Matt Francis.

Round two: Kinwald, who had earned the



Picture this: you're in a hot warehouse in the middle of Dallas, TX, it's more than 100 degrees inside, and you show up to race from early morning to late at night. That's dedication.

pole position with his first-round victory, took off and never looked back. The real battle was between Mark "no, not Matt" Francis and Johnson. Francis had the line,

and kept Johnson to third. The final 2WD Mod round would decide not who would win—Kinwald, with two firsts, had already done that—but the second through ninth

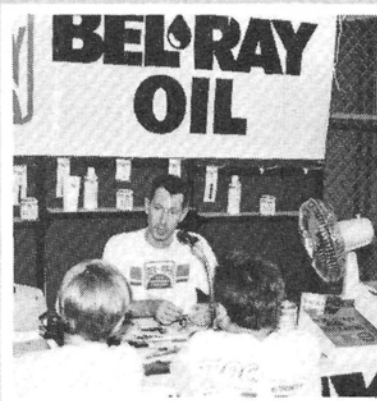
Body	Front Tires	Rear Tires	Sponsors
Stock	Losi Rib HT	Pro-Line 7080	Traxxas, Peak Performance, Novak, Airtronics, Lunsford, MIP, RCPS, Pro-Line, Yokomo
Stock	Losi Rib HT	Jammin Mini Pin HT	Team Losi, Jammin Products, Futaba, Lunsford, Tara's Pleasure Dome
RCPS Turbo Mirage	Losi Rib HT	Pro-Line 7080	Associated, Reedy, Pro-Line, Lunsford, MIP
Stock	Losi Rib HT	Jammin Mini Pin HT	Team Losi, Race Prep, Novak, KO, Comp. Electronics, Maurer Power, Jack's Limo Service, Thong Watchers Inc.
RCPS Turbo Mirage	Losi Rib HT	Pro-Line 82	Traxxas, Peak Performance, Team Orion Tekin, HPI
Stock	Losi Rib HT	Jammin Mini Pin HT	Team Losi, Trinity, Novak, Oakley, JR Propo, Dirt Bagz, Tecnacraft, Amber Lynn Racing
RCPS Turbo Mirage	Losi Rib HT	Pro-Line 7080	Associated, Reedy, Waldo Racing
Stock	Losi Rib HT	Jammin Mini Pin HT	Peak Performance, Team Losi, Team Orion, Andy's Bodies
RCPS Turbo Mirage	Losi Rib HT	Pro-Line	Traxxas, Specialized R/C Motors
Stock	Losi Rib HT	Pro-Line Fuzzie	Houston R/C Hobbies

Body	Front Tires	Rear Tires	Sponsors
RCPS Turbo Mirage	Losi Rib HT	Pro-Line 7080	Associated, Reedy, Yokomo, Airtronics, Novak, Pro-Line, RCPS, Kimbrough
RCPS Turbo Mirage	Losi Rib HT	Pro-Line 7080	Reedy, Associated, Novak, Kyosho, Pro-Line, RCPS, Lunsford, El Dorado Speedway, L&B Racing
Stock	Losi Rib HT	Jammin Mini Pin HT	Team Losi, Trinity, Novak, JR Radios, Jammin, Tecnacraft, Oakley, Norm's Discount Computer Outlet
RCPS Turbo Mirage	Losi Rib HT	Pro-Line 7080	Reedy, Associated, Yokomo, Com Tru, Novak, RCPS, Jammin, Airtronics, Pro-Line, Competition Electronics
Stock	Losi Rib HT	Jammin Mini-Pin HT	Team Losi, Trinity, Jammin, Futaba, Lunsford
Stock	Losi Rib HT	Jammin Mini Pin HT	Team Losi, Trinity, Novak, Airtronics, Jammin, Ranch Pit Shop, Andy's
RCPS Turbo Mirage	Losi Rib HT	Pro-Line 7080	Associated, Reedy, Pro-Line, Lunsford, MIP
RCPS Turbo Mirage	Pro-Line Rib	Pro-Line 7080	Associated, Reedy, Pro-Line, Novak, Airtronics, Oakley, RCPS
Stock	Losi Rib HT	Pro-Line Fuzzie	Traxxas, Peak Performance, Novak, Airtronics, Lunsford, MIP, RCPS, Yokomo, Pro-Line
RCPS Turbo Mirage	Kyosho Fuzzy	Pro-Line 7080	Associated, Reedy, Schumacher, Pro-Line, Novak, KO, Du-Mor, Star Force

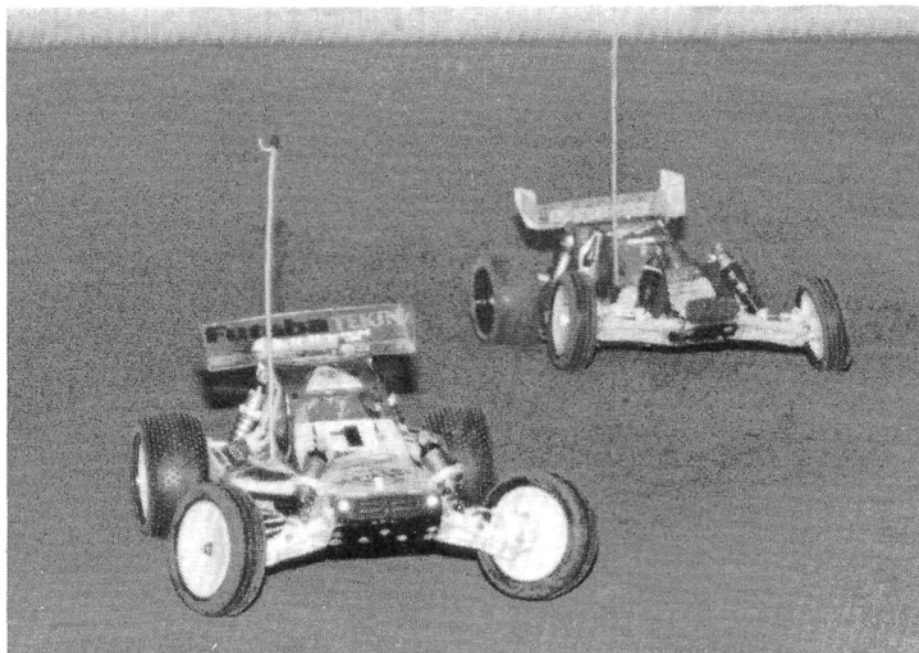
Body	Front Tires	Rear Tires	Sponsors
Stock	Pro-Line Fuzzie	Pro-Line 7080	Reedy, Associated, Yokomo, Pro-Line, Com-Tru, Novak, RCPS, Jammin, Comp. Electronics, Airtronics
Associated YZ-10	Pro-Line Fuzzie	Pro-Line 7080	Associated, Reedy, Novak, Pro-Line, Airtronics, HPI, RCPS, Oakley, Yokomo
Stock	Jammin	Jammin	Schumacher, Team Losi, Trinity, Airtronics, Jammin, Ranch Pit Shop, Andy's
Stock	Pro-Line Fuzzie	Pro-Line Fuzzie	Associated, Reedy, Novak, Kyosho, Pro-Line, Lunsford
HPI	Jammin Mini Pin	Jammin Mini Pin	Team Losi, Trinity, Kyosho, Novak, JR, Jammin, Tecnacraft, Oakley, Brigitte's B&D Specialties
Associated YZ-10	Pro-Line Fuzzie	Pro-Line 7080	Associated, Yokomo, Reedy, Pro-Line, Novak, Airtronics, Oakley, RCPS, Jammin Products
Stock	Jammin 701	Jammin 701	Losi, Trinity, Novak, Futaba, Oakley, Tecnacraft
Kyosho Optima Mid	Pro-Line 7080	Pro-Line 7080	Associated, Reedy, Novak, RCPS, Pro-Line, Kyosho, Turbocharger, Team R&R, Team Arlington
Associated YZ-10	Pro-Line Fuzzie	Pro-Line 7080	Associated, Reedy, Yokomo, Airtronics, Novak, Pro-Line, RCPS, Kimbrough
Stock	Kyosho Fuzzy	Pro-Line 7080	Reedy, Associated, Schumacher, Pro-Line, RCPS, Novak

OFF-ROAD NATS

SUPPORTING HIS CUSTOMERS



The Off-Road Nats was about the fourth race at which I've seen "the Bel-Ray Guy," a.k.a. Howard Rosen. Howard's company, HLR Distributors, exclusively handles Bel-Ray's line of R/C products (motor spray, motor bath, bearing and bushing lube and diff lube). To promote his products, Howard sets up a booth at major events and cleans and "dynos" motors for any racer—free! It's just like having your very own factory motor mechanic on hand.



While conditions weren't ideal, the racing action was intense.

places! Apparently, Mark Francis had just been warming up in the first two rounds, as he took the win over Beckwith and Team Losi's Jammin' Jay Halsey. After the final tally, it was Kinwald with the overall win, followed by Mark Francis and his Reedy-

powered Team Car. T.Q. Johnson was relegated to third overall.

Have you ever watched a car during a race and thought to yourself, "Man, that car is *dialed!*" That's the only way to describe Beckwith's

COMPLETE WITH HEADDRESS

After sweeping both 2WD classes at last year's ROAR Nats, Kyle Reed came to the '92 Nats as the driver to beat. I got the chance to chat with Kyle and discuss his impressions of this race.

Coming off last year's big sweep, did you feel a lot of pressure going into this race?

Not really. I obviously wanted to win, but I didn't really put a lot of pressure on myself because I had a good year last year. Today, every race is different; you're only as good as your last race. That's how I take things, so last year was last year's nats, and this is a fresh start. I'm just starting over from the beginning, and we'll see how it turns out.

What do you think of this year's track as compared to last year's (the S.C.O.R.E. track in Georgia)?

It's really hard to compare because last year's track was the best off-road track I've ever driven on. Of all the places I've raced, Savannah was definitely the best.

No comment on this facility?

No. I plead the fifth on that one.

If you could have been one of the Village People, which one would you have been?

That's before my time, but I kind of like the Indian guy, though, he was pretty cool. I can see you as the construction worker.

Thank you. I'll take that as a compliment. You've already qualified for the '93 Worlds. Has this relieved any of the pressure from this race?

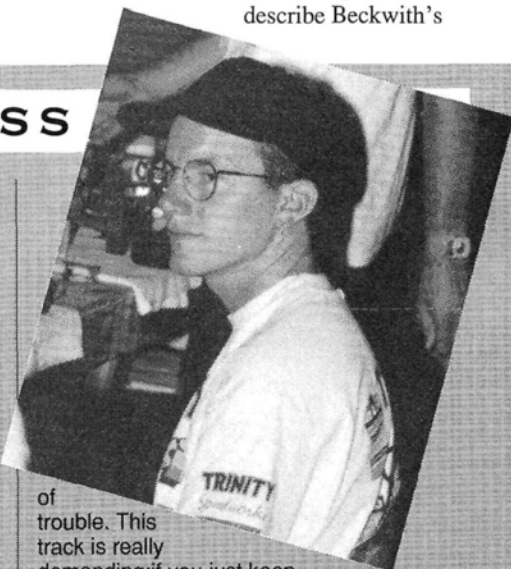
Definitely. I'm not in a situation where I have to make the A-Main. I can just come out here and have fun and help the guys who haven't qualified for the Worlds yet.

What's your favorite part of the track? What's your least favorite?

My favorite part is the end, and my least favorite is the start. (Laughs)

What's the secret to putting in an A-Main qualifier?

For me, it's running a stock motor in Modified because my Stock time is faster than my Modified time. I think it's just to stay out



of trouble. This track is really demanding; if you just keep your speed up and stay out of trouble, you're in.

How do you compare the Losi cars on this track with the other cars?

I think we started out a little bit behind at first, but we're slowly starting to come back up. On this type of surface we always seem to have problems, but I think we're finally getting them solved. I think we'll have a good showing here.

**With two wins,
Beckwith was crowned
the '92 ROAR 4WD
National Champion.**

Yokomo. Through all three rounds of the 4WD Modified A-Mains, Beckwith made incredible charges. He won the first A-Main by a margin of three seconds after a heated battle with Associated Teammates Mark Pavidis and Kinwald. Round two saw Pavidis prevail over Mark Francis and Beckwith. Round three was all J.D. again,



Jammin' Jay Halsey tosses a "used" tire in the trash can after one of his heats. Pit groupies were later seen scurrying for Jay's "table scraps."

followed by Pavidis and Matt Ledger's Schumacher BossCat. With two wins, Beckwith was crowned the '92 ROAR 4WD National Champion. Top Qualifier Pavidis had to settle for second, and Jay Halsey, with three consistent performances, took the third slot with his Trinity/Schumacher combination.

AN EVENT TO REMEMBER—NOT!

All in all, the Nats would have been a nightmare if not for the 500 racers, who kept their spirits high through sweltering heat and failing computers. Thanks to them all for putting on a great show and keeping their cool.

Quite a lot was learned from this event, and I know that next year's Nats will be much different, so stick with it. I'll see you all in '93.



While covering the race at Norm's sweltering pleasure palace, we ran into an interesting R/C racer named Jane McMillan. At 61 years young, Jane is a retired junior-high-school teacher who has given up the "I'm going to Florida" cliché to become a full-time R/C racing fanatic! Jane races a Traxxas TRX-1 and a Blue Eagle truck. She and her husband, Don, travel the country in their RV seeking high-quality R/C racing events year-round. We caught up with Jane between heats and asked her a few questions.

When did you become involved with R/C cars?

I retired six years ago, and my husband Don and I began to travel all over the country. One day we came across an R/C race and thought it looked interesting, so we gave it a shot. My first car was a Tamiya Super Saber 4WD. Don and I practiced with our cars for roughly 3 to 4 months, playing follow-the-leader for control. Then we'd try to take the lead away from each other without

making any contact. We practiced three to five times a week.

What has been your most exciting race?

I'd have to say it was at the Dallas Mickey Thompson Grand Prix. I was racing in the Pro Stock Class with my Blue Eagle, and it was the last race of the day. I was in the lead and my front tire came off, but I was only losing a second a lap. The guy in second place was coming up behind me pretty fast, and right at the end, just before the finish line, his battery dumped and I beat him by a few inches.

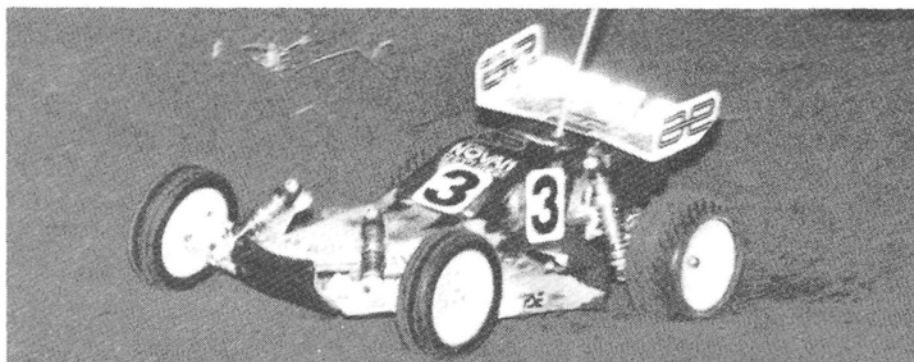
I've also had a few memorable local A-Main finishes, and I made it into the NORRCA Nats Modified Truck B-Main. I'm also the first woman to win a main event at the Mickey Higgs Racetrack in Roundrock, TX.

Do you do your own work on your R/C vehicles?

Yes, I do all my own work. I even paint the bodies. Don helps me out sometimes, though.

A lot of the other racers have fun with you and kiddingly call you "the little old lady" or "the old woman." Does that bother you?

No, because I know it's done in fun, and it's good-natured teasing. I like all the people I've met on the racing scene so far; they treat me very well and make all this very enjoyable. Also, my sponsors—Traxxas, Bel Ray, Specialized Motors, Lightspeed and Smooth Batteries—help me out and give me support at each race. I'd like to thank them all.



J.D. Beckwith came on strong, finishing fourth overall in 2WD Modified and winning overall in 4WD Modified.

AS LONG AS YOU'RE YOUNG AT HEART!

TRAVELING TO A major race may seem like a hassle, but if you do it properly, things go smoothly. I've had plenty of experience going to races all over the world, and I've learned some valuable lessons that have made these experiences much more pleasant. There's one crucial point to remember: plan! The more in advance you can plan, the better. A lot of preparation goes into traveling to a race, and I'm going to show you where to start.

DON'T DELAY

Complete and submit your entry form as soon as you decide that you want to attend the race. Many large races limit the number of entries they'll accept, and they fill up very quickly. It would be a shame to have everything ready to go and then find out that you hadn't entered in time.

Next, take care of your travel arrangements. With all the discount rates that airlines offer for early reservations, you can save hundreds of dollars by making reserva-

which days are set aside for open and controlled practices. Your best bet is to arrive a day before anything happens at the track; that way, you can adjust to your surroundings and get a feel for the area.

When you know on which day you want to arrive, make your hotel reservations. If you're fortunate enough to have a friend or relative in the area, then you don't have to worry about this—if they'll let you stay with them, that is! This usually isn't the case, though, so get in touch with the race director, or contact the person listed on the entry form and ask him where to stay. This is very important, because most races have "host" hotels that offer discounts for entrants. (This information is often provided with the race-entry confirmation packet.) Try to stay at these hotels, not only for the lower rates, but also because it's where most of the other racers will stay. Hanging out with other racers is a great way to hear about hot set-ups for the track. It's also a great way to make friends.

You could also have a travel agency make all your arrangements. It's often easier to use an agency; they can give you many airfare options and reserve a rental car for you. They can also usually give you boarding passes with your tickets so you won't have to wait in line at the airport for a seat assignment.

Look into car rental agencies; rates can vary by as much as \$20 a day. Also remember, most car rental

agencies require that you be 25 or older and possess a major credit card. Some do rent to younger people, but it costs an arm and a leg. Here's a hot tip:

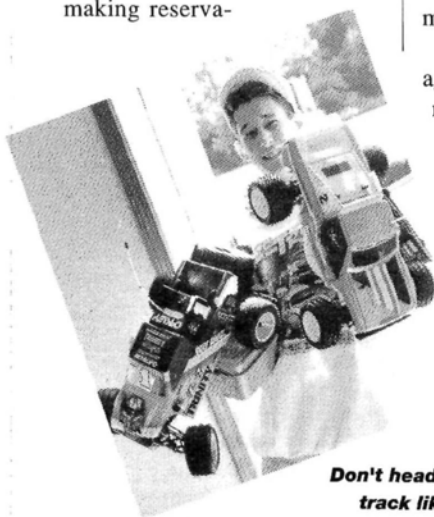


PHOTOS BY WALTER SIDAS

How to Travel to a Major Race

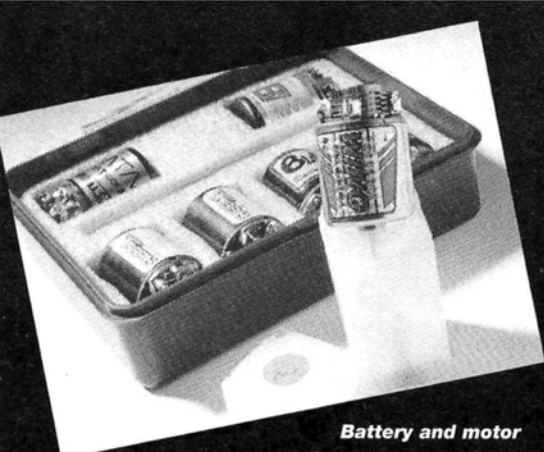
Pack lean, pack mean!

by JACK JOHNSON



Don't head to the track like this.

tions well in advance. Decide when you want to arrive at the track for practice. There's usually a schedule of events on the entry form that will tell you



Battery and motor organizers are essential to ensure the safe transit of your valuable gear.

ROAD TRIP!

Probably the hardest thing to do is to pack all your parts, tools, cars and accessories. It's easy just to fill up the back seat of your car and go to your local track for a race, but packing for an airplane trip is a different story. First, eliminate unnecessary items, especially if they're large.

The trick to "condensing" your equipment is to organize it. There are many sizes and styles of fishing-tackle box available that can help you organize your equipment. They work very well for miscellaneous small parts and hardware. Put your tools in a medium-size tackle box or a small cardboard box. You should also use some sort of battery and motor organizer. Motor tubes work well for transporting motors. When you pack your batteries, make sure they can't short-out in transit. (Keep in mind how rough baggage handlers can be.)

Specially designed carrying bags make traveling with your equipment a breeze.



After you've organized your equipment in these small boxes and containers, decide how to carry everything. I like to use a carrying case such as those offered by *Car Action*, *Race Prep*, *Trinity*, *Dirt Bagz* and others.

You could also use a trunk. The problem with trunks is that very few of them can withstand the abuse. *Tupperware* makes a large one that seems tough.

Ask the airline how many bags you can check. (Try to leave room for a suitcase, too!) I pack my car and transmitter in a carry-on bag to save valuable room in my luggage for parts and other bulky equipment. Just make sure that your carry-on bag will fit in an overhead compartment, or you might wind up having to check it with your luggage. One racer I know was charged \$200 extra for his many bags. Don't forget to ask how many carry-ons you're allowed.

If you wind up with too much luggage, you can ship some boxes to your hotel. Call the hotel before you ship the boxes, and they'll tell you how to address the boxes so they can hold them for you. Then get information from shipping companies. See who can get your stuff there safe and sound, on time and at the most reasonable price.

pay the agency in advance for a tank of gas. (Because you have to return a rented car with a full tank of gas, paying the agency in advance for one allows you to rush back to the airport without stopping for it!)

WHEN YOU GET THERE

Your race information packet should include a map of how to get from the air-

port to the track. Take it with you! (If you don't, the car rental agent should have a map for you.) Make sure you know how to get to your hotel. It doesn't hurt to tour the area, either; not only will you learn where you can eat for less than \$30 (room service is a joke at most hotels), but you'll also see what other parts of the country are like.

If you arrive at night, you might want

You'll need an assortment of tuning parts to dial-in your car to the track.



what to take

It's crucial that you plan carefully what you'll take. There's nothing worse than being a thousand miles from home and realizing that you've forgotten something. Take as many spare parts as you can, and even though tires and wheels take up a lot of room, you'll need enough to get you through

practice and the race. If you can, try to find out which tires work well at the track you're going to. This could save you from packing tons of tires that you won't need.

Plan to take an assortment of tuning parts with you, e.g., a variety of shock fluids, springs, pinion gears, spur gears, etc. Every track requires its own setup, so *be prepared*.

You might want to take something to keep yourself entertained when you aren't racing. Our famous Team Losi water balloon launcher is an excellent example of this. Unfortunately, we aren't allowed to take it on any more road trips. Other handy items include a Walkman, a hand-held video game, a deck of cards; you get the idea.

Check the weather forecast for the area you'll be visiting so you know what kind of clothes to pack. If it's going to be rainy and miserable, or extremely hot and humid, it's best to know in advance.

Some things that you *won't* want to take if you're flying to a



Most competitors take items such as a Walkman or a hand-held video game to use when they aren't racing. The water gun is a warm-weather option!



to go past the track, just to be sure that you know where to go the next day. If you get there during the day, go to the hotel first to drop off your suitcase and register. This way, if you stay at the track late, you won't have to worry about your bags or about the hotel giving your room to someone else.

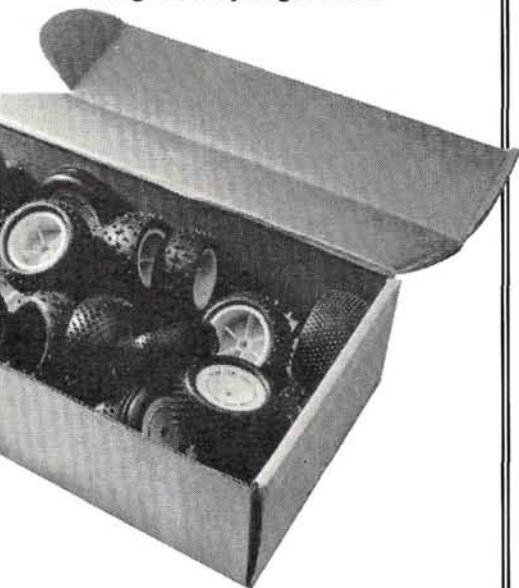
All you have to do after that is pick up your A-Main trophy and make sure that you get back in time to make your return flight!

race include motor spray, butane fuel, spray paint or any other combustible items (nitro, for all you gas racers) that you'd usually use. They're prohibited by the airlines, and if you're



Flammable substances such as motor spray and spray paint are definite no-nos on the airplane!

caught trying to sneak them onto a plane, you'll be in for a big surprise and a major fine! Most tracks have hobby shops on site, so you can buy these things when you get there.

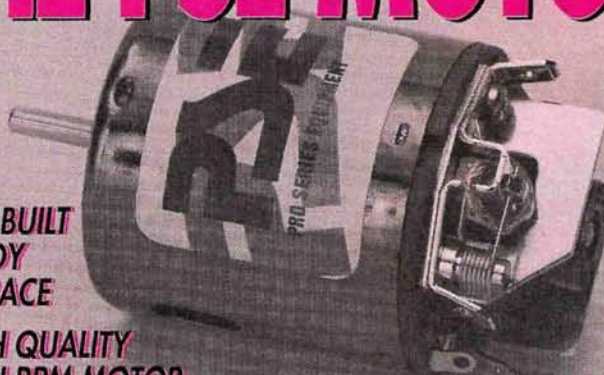


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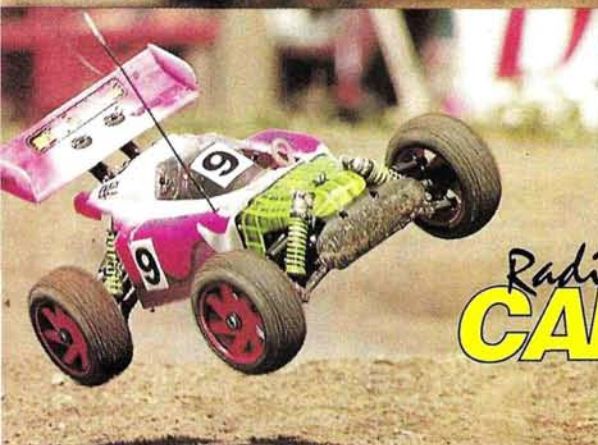
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KYOSHO WORLD



by JOHN HOWELL

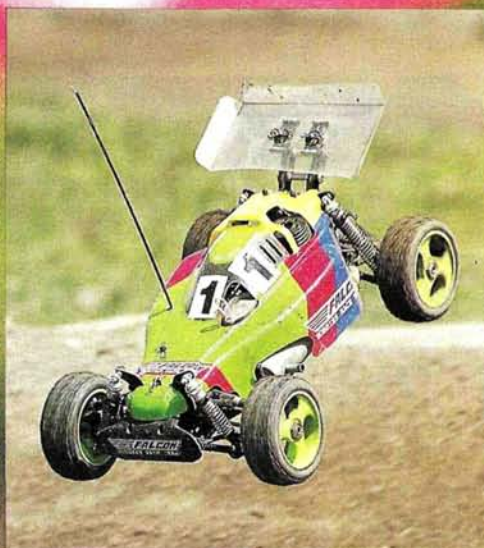
**"They're fast!"
"OK, I'll be careful."
"No, you don't
understand John.**

**They're
really
fast!"
said Car
Action's
execu-
tive edi-
tor Frank
Masi. "As
a matter
of fact,**

**they're probably
faster than any R/C
car you've ever shot.
You'll really have to
watch your back at**

**all times when
you're on the
track shooting
photos of
these 1/8-scale
buggies."**

**"OK, Frank; I
get the point;
I'll be careful."
But I didn't
realize what
was in store
for me.**



PHOTOS BY JOHN HOWELL

WORLD CHALLENGE

WORLD CHALLENGE

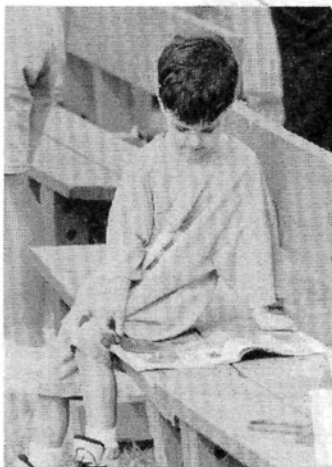
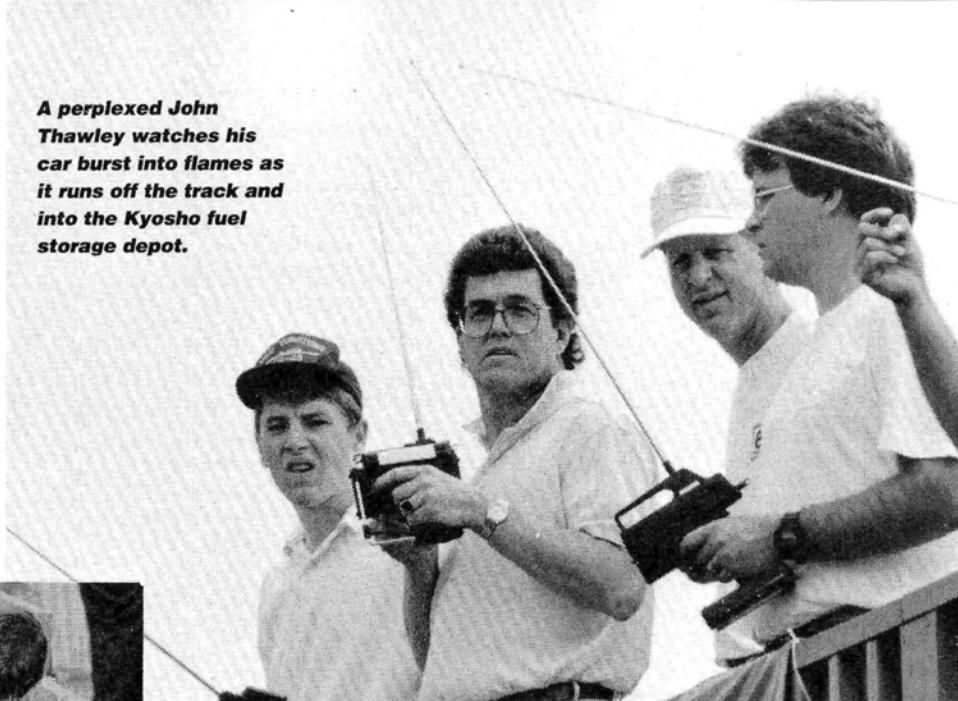
FUEL FOR THOUGHT

That was a few days before the third annual Kyosho Gas Challenge in Detroit, MI. I had never been to an 1/8-scale off-road gas race, and ever since I started to work at *Car Action*, I had been hearing how awesome they are, so I was excited to be covering this year's event. I was also very curious to see how different this race would be from an electric R/C event. With electrics, there are stock motors, modified motors, high-tech speed controllers, maxi-trick chargers, matched/pushed batteries and battery matchers; and that's just the beginning! It's kind of hectic! Would gas racing be as complicated?

We arrived on a Thursday, a few days before the event, and quickly headed to the jacuzzi. (Hey, we have our priorities straight, don't you think?) Actually, we went to the track to meet Team SEMMROC's guru and this year's Gas Challenge organizer, John Thawley, to discuss the schedule of events. We also cruised the pits, caught up with a few of the racers, and Frank went off to find Kunio Dudgeon. (Frank was to compete in the 1/10-Scale Truck Class with one of Kunio's LX-T conversions.)

I surveyed the track, trying to find the best place to shoot

A perplexed John Thawley watches his car burst into flames as it runs off the track and into the Kyosho fuel storage depot.



Another satisfied customer. During a lull in the action, Ryan Welsh kicks back with a complimentary copy of *Car Action*.

photos without the risk of being decapitated by an oncoming 1/8-scale buggy. The next day would be mainly for practice. We checked into our hotel rooms so that we'd be bright-eyed and bushy tailed at the track early the next morning.

FRIDAY'S PRACTICE

Teams from Japan and other racers from abroad would add an international flavor to the

race. How would they fare against top U.S. racers? The track, which was the site of the '91 IFMAR Off-Road Worlds, was perfectly groomed, and all the racers were eager to get out there and get their cars and trucks dialed-in. It was all systems go!

When the buggies hit the track, it was obvious that Jack Johnson was the one to beat. Kris Moore and Japan's Yuuichi Kanai turned in some hot lap times, but Johnson was setting the track on fire. The UK's Mick Cradock was running well with his Inferno, but was a notch behind Kania's lap times.

Jay Halsey, competing with a Pirate, was

Racing in the U.K. Catching up with Mick Cradock



Mick Cradock, who hails from Stevenage, England, has been racing gas buggies for the past five years. He has come to the States for all three Kyosho Gas Challenges, and I asked him a few questions about his racing career over there, and what he thinks of the racing scene in America.

How popular is gas racing in Great Britain?

MC: It's very popular; it's big all over Europe—as popular as electric racing.

What do you think of the gas racing scene over here?

MC: America has to catch up a bit, but you're doing a good job so far. I see it getting more and more popular, and that's good.

How often do you race in Great Britain?

MC: I race every week from March to October.

What do you race besides 1/8-scale gas buggies?

MC: I also race 1/10-scale gas trucks.

Which do you prefer?

MC: I'd have to say the buggies.

How did you qualify in this event?

MC: I did really well in the buggy category; I qualified fourth, but in the truck class, I'm second in the B-Main.

Who are your toughest competitors here?

MC: Jack Johnson, Kris Moore, Yuuichi Kania and Kazushige Yoshida.

Thanks Mick, and good luck to you.

MC: Thank you, and I'd like to thank my sponsors Kyosho, RipMax and Werx Factory Grafix for all helping me out.

WORLD CHALLENGE



Kris Moore and Jay Halsey catch some of the action during the lower heat races. Moore qualified 2nd overall, while Halsey unfortunately couldn't get his car dialed-in. When it did run, though, it was full throttle!

In the truck division, our own Frank Masi turned in some really fast lap times, but a technical problem kept him out of the running during most of the qualifying runs. Fortunately for Frank, for the second-to last qualifying run, he got his truck dialed-in then held the TQ position until Ruffy Rios and his DuraTrax RC10T gas conversion took it over right at the end of the day in the last truck qualifier. Others who were at the head of the truck pack and looking good were Bill Jeric (also racing

the brand-new DuraTrax racing truck conversion), Doug Von Mosch and Rich Boomsma.

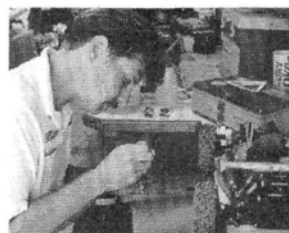
RACE DAY

Saturday's qualifiers went without a hitch, and then it was race day! Sunny Sunday. Roughly 2,000 spectators turned out to watch the event. John Thawley got through the lower Mains without a hitch and must be commended.

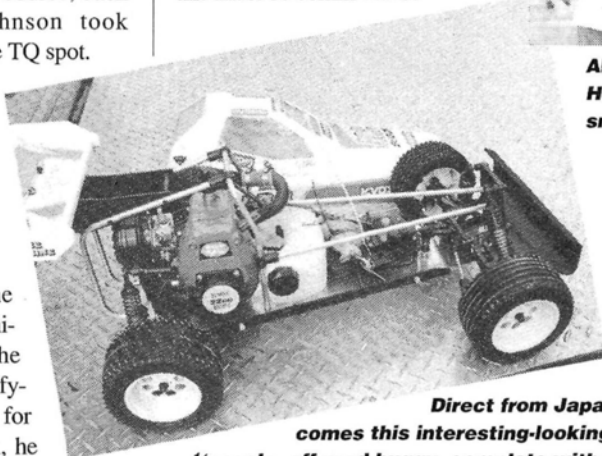


Above: the man, the myth, the apron: not only did Hobbico's Bill Jeric make sure that the event ran smoothly, but he also did quite well in the races,

finishing 1st in the Buggy B-Main and 4th in the Truck Class. Left: Jack "I didn't need that part either" Johnson pits in the Team Kyosho/Composite



trailer. He had traction galore with his trick Italian Mondial tires.



Direct from Japan comes this interesting-looking, 1/5-scale, off-road buggy, complete with a 22cc 2-stroke engine. Cost? Don't ask! It costs around \$1,500. If there's enough demand, Kyosho might import it.

• **Truck A-Main.** This 15-minute race was the first to get under way, with Masi pulling the

With one lap to go, Masi went wide as he crossed the finish line, and Boomsma slid past him. The crowd went wild. So far, this was the closest, most exciting race. Boomsma had driven flawlessly to win; Masi tried everything,

1992 Gas Off-Road World Challenge



Kris Moore

BUGGY

FIN	QUAL	NAME	CHASSIS	MOTOR	FUEL	TIRES	RADIO
1	2	Kris Moore	Kyosho Inferno	Paris Picco	20% Thai Juice	Mondial	KO
2	3	Yuichi Kanai	Kyosho Inferno	O.S. RX-B	K&B	Kyosho	Sanwa
3	5	Kazushige Yoshida	Kyosho Inferno	O.S. RX-B	K&B	Kyosho	Sanwa
4	1	Jack Johnson	Kyosho Inferno	Paris Picco	20% Thai Juice	Mondial	JR
5	4	Mick Cradock	Kyosho Inferno	O.S.	Jeric Special Mix	Kyosho	Futaba
6	7	Dave Henry	Kyosho Inferno	Paris Rex	Blue Thunder	Kyosho	Futaba
7	9	Scott Parkes	Kyosho Burns	O.S. RX-B	O'Donnell	Boss	Futaba
8	6	John Adams	Pirate	Paris Picco	Blue Thunder	Pro-Line	Airtronics
9	10	Kiyokatsu Kishi	Kyosho Inferno	O.S. RX-B	K&B	Kyosho	Sanwa
10	8	Jay Halsey	Pirate M1	Paris Picco	O'Donnell	Pro-Line	Airtronics



Rich Boomsma

TRUCK

FIN	QUAL	NAME	CHASSIS	MOTOR	FUEL	TIRES	RADIO
1	7	Richard Boomsma	LX10T*	O.S. CZ-R	Delta 15%	Associated/Losi	JR
2	2	Frank Masi	LX-T*	O.S. CZ-R	Delta	Team Losi	JR
3	10	John Huber	LX-T*	O.S. CZ-R	Blue Thunder	Team Losi	JR
4	3	Bill Jeric	DuraTrax RC10T	O.S. CZ-R	O'Donnell 20%	Team Losi	KO
5	9	Stew Basye	LX-T*	O.S. CZ-R	Delta	Team Losi	KO
6	4	Doug Von Mosch	LX-T*	O.S.	Delta	Team Losi	Airtronics
7	5	Philip Simms	DuraTrax/CC**	O.S.	O'Donnell	Team Losi	KO
8	8	Rick Hobbs	LX-T*	O.S. Max	Delta	Team Losi	Airtronics
9	6	Jayson Centeno	Lqsi JR-XT	O.S. CZ-R	O'Donnell	Team Losi	Airtronics
DNS	1	Ruffy Rios	DuraTrax/CC**	O.S. CZ-R	O'Donnell	Team Losi	Futaba

* by A-Main Racing/Dudgeon Engineering **CC = Composite Craft



Pit Stop Fever Ya gotta stay on your toes...

While I was scoping out the track, I ran across a frenzied John Huber (former *Car Action* associate editor) who was searching for a pit person. His race was coming up, and he was having trouble finding someone. "If you're not busy, do you think you could pit for me?" he asked. I thought, "He must be desperate! He knows I've never been to a gas race before," but I said, "Sure; just as long as you tell me what I have to do."

The next thing I know, I'm on the pit row with nine nitro,

amped-out, pit groupies, with John giving a 20-second talk on the basics of how to pit. I quickly learned how to start the car, how to get the car to the starting line without it stalling, how to use the fuel gun, how to refuel the fuel gun, how to open the car's gas tank, how to time John's laps to know when he was coming into the pit for more fuel, how to work his starter box to get his car restarted in case it "flamed out," how to stay out of the way of the others coming into the pits, how to...how to...how to. My

brain seemed about to explode.

"Do you have all that?" asked John.

"I hope so," I said, feeling quite dizzy.

"Good. Don't worry about it; you'll do fine," reassured John. Then he was off and running for the drivers' stand, and I was left with my heart pounding, all the time hoping I wouldn't make a mistake.

I got John's car started without a major incident and sent him out to practice, then a minute or two later, the signal came over the PA to get the cars refueled and to the starting line.

I quickly refueled his car, put it on the line in the designated spot and stood back, praying that he really wouldn't need me except for a quick refueling. I could handle that...

BOOM!

As soon as the cars left the line, I was nearly trampled by pit groupies frantically rushing back to pit row. I scrambled for my spot and tensely awaited a signal from John.

About halfway through the race, John signaled that he was coming in on the next lap and that I should be ready.

"This is it!" I thought.

John made it through the pits to me, I refueled, and he was off again. (I didn't have a chance to apologize to the people whose toes I stepped on to get to John's car: sorry guys!)

A few laps later, disaster struck! Rounding one of the last corners of the track, John "flamed out." The hundred-yard dash had begun.

I managed to get his car back to the pits and restarted in almost no time at all, and then he was back out on the track again. My heart was pounding.

I had a terrific time being John's pit groupie. Even though I was scared of making a mistake, I was also thrilled. Thanks, John; I'll never forget it, and it gives me a new appreciation for all the hard work and preparation done by the regular pit people. And pitting is definitely a blast!—as long as you have the nerve for it!

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Kyosho, Paris Racing, JR, Team Losi, Composite Craft, Oakley
Ripmax, Kyosho, Werx Factory Graffix, O.S., Billy K School of Driving
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Horizon, Team Pirate, Paris Racing, Blue Thunder
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A-Main Racing, Dudgeon Engineering, RC Motorsports, Delta
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Composite Craft, DuraTrax, Hobbico, Kyosho
A-Main Racing, RC Motorsports, Dudgeon Engineering, Delta
Pegasus Hobbies, OFNA, O'Donnell
Composite Craft, Kyosho, DuraTrax, Team Losi



Gas racing is exploding (no pun intended). Here are most of those who played a crucial part in the '92 Kyosho Gas Challenge. By next year's race, who knows? Maybe we'll see twice as many.

but finished 2nd; Huber was 3rd; Jeric 4th.

• **Buggy A-Main**—a 30-minute event in which Jack Johnson and Kris Moore were the favorites, so all eyes were on them.

At the start, Johnson took the lead over Kris Moore. For the first 10 minutes, the two dived, with Johnson mostly to the fore. But Johnson biffed over a small jump, and Moore slid by him to take the lead.

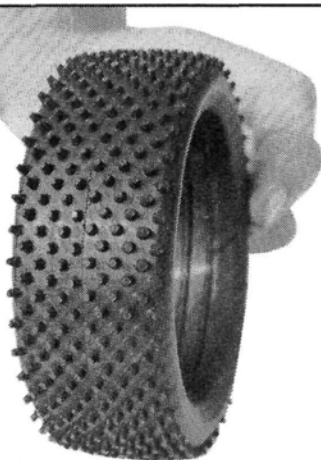
But Moore's lead didn't last long. At the 15-minute mark, he flamed out, leaving Johnson to take over as leader of the pack. Meanwhile, Yuuichi Kanai was holding down the 3rd position with Kazushige Yoshida right behind him and applying pressure.

By the 18-minute mark, Johnson had a two-turn lead over Moore and looked unstoppable, and the crowd started to relax. At the 23-minute mark, Johnson went in for his final pit. He left the track, still in first, then "flamed out." In the pits, his crew frantically tried to restart his car, and they were successful, but it was too late. Moore had put a considerable dis-

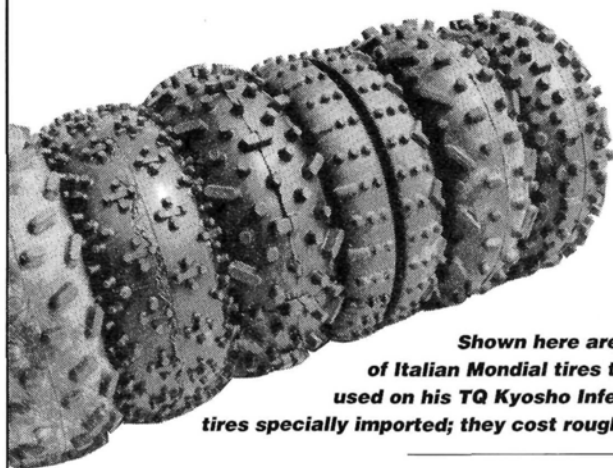
What's New in the Pits

All the hot new gas goodies!

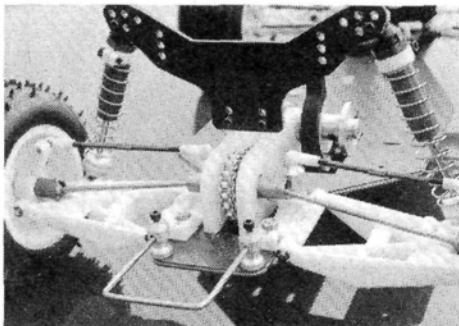
At any race, the roving eyes of *Car Action* staff always seem to zone in on all the trick new items, and this race was no exception. These photos show just a sample of the goodies that will soon hit the gas market.



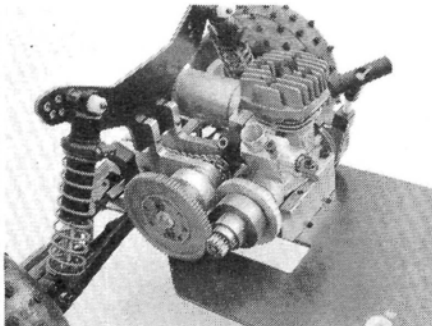
Pro-Line debuted its hot prototype 1/8-scale-buggy tire, and two top drivers in the A-Main ran them.



Shown here are a few of the sets of Italian Mondial tires that Jack Johnson used on his TQ Kyosho Inferno. He had these tires specially imported; they cost roughly \$25-\$50 a pair.

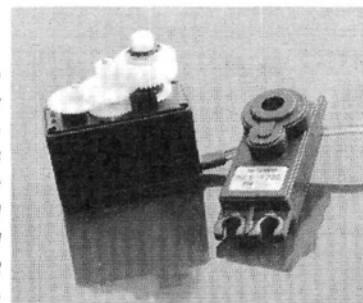


This truck looks interesting! It's basically what the guys from DuraTrax raced. Available for the RC10T and LX-T, the kit includes a graphite chassis, a chain-drive system and an O.S. .12 CZR engine with a pull-starter. How did they run? Just ask Ruffy Rios who TQ'd with his kit.

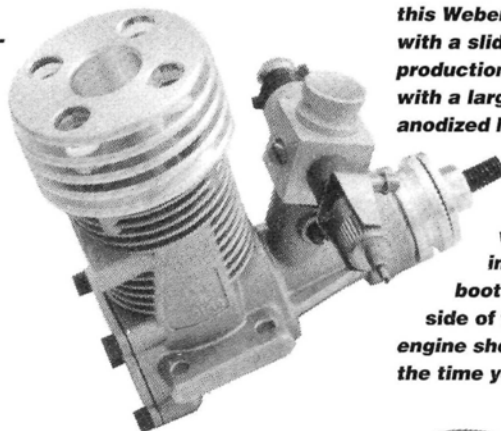


This Paris 92 competition Picco .21 engine is an updated version that's being distributed by Horizon Hobby Distributors. Total horsepower!

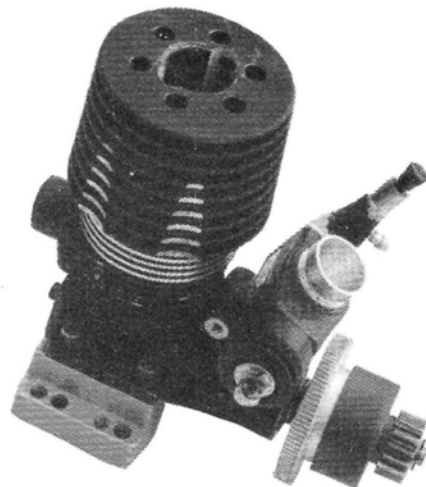
This new servo from Hobby Dynamics is totally trick. The JRPS 4735 has great features like dual ball bearings, and it has 90.42 ounces of torque



and a transit time of .15 second. It measures 1.75x0.74x2.14 inches. All of this for only \$99.95!



Hobby Dynamics will distribute this Weber .12 engine. It comes with a slide-valve carb, and the production model will come with a larger/taller purple-anodized head. It has real ABC chrome plating on the piston and sleeve, and it comes with a dual ball-bearing crank. A rubber boot is attached to the side of the slide carb. The engine should be available by the time you read this.



tance between them.

Unbelievably, at the 27-minute mark, Johnson's car flamed out again, and his crew made another mad dash to get it back to the pits. He had run out of fuel! Refueled and restarted, he hit the track again, now in 4th overall. And that's the way it was to the end: Moore, Kanai, Yoshida, Johnson and Cradock were the top five.

After the trophy presentation, we all went to Canada in our race-ready Dodge Spirit rental car (only in Detroit, huh?) for dinner. The next morning, it was back to the airport for the trip home. Unfortunately, Masi and I missed our company jet, and we had to wait for the next available flight to New York. Oh, well!

So what did I think of my first gas race? Let's put it this way: when it comes to having

a pure psycho adrenaline rush nothing tops 1/8-scale off-road racing. There's just something about it that gets you pumped! Is it the whine of those screaming 2-stroke engines as the cars blur past you at more than 40mph down the straightaway? Or is it the speed that keeps you on the edge of your seat through a 30-minute A-Main? If it sounds like fun to you, don't miss the next Kyosho Gas Challenge. ■



SPEED SHOP

A&L JRX SE Concept Body

A&L offers a hot, new Losi body that comes with molded-in cooling scoops. It looks totally trick.

Part no. 9507

Price: \$12.95

A & L Mfg., P.O. Box 2115, Corona, CA 91718; (714) 735-5249.

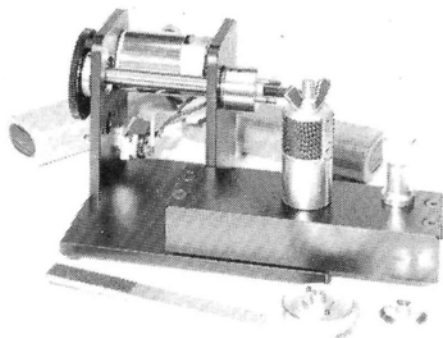
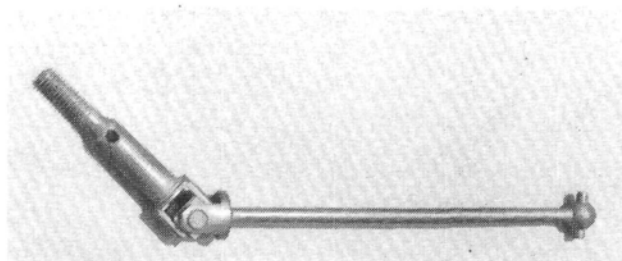


RAETECH RC10T Universal Axle

This axle was designed especially for the tough conditions of off-road truck racing. It's made of chrome-alloyed steel and is fully heat-treated, super smooth and long-lasting.

Price: \$41.95

RaeTech Inc., 3101 W. Thomas Rd., Phoenix, AZ 85017; (602) 272-4223.



MAXMOD MINI SPORTS Bench Racer

You won't see Bench Racers burning up the

track, but they're leading the pack on pit row. Bench Racer is wired for two, 6-cell Ni-Cd packs with Tamiya connectors, but it can also be used with a 12 to 15V DC power supply (15A minimum). It isn't assembled.

Price: \$149.95

Maxmod Mini Sports, 845-A W. Olive Ave., Monrovia, CA 91016; (818) 339-7737.

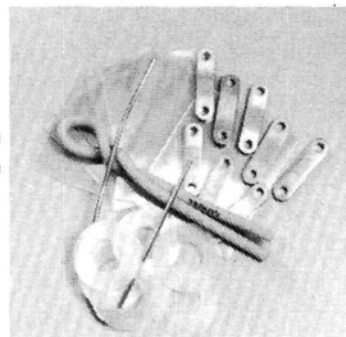
TRINITY Battery-Pack Building Kit

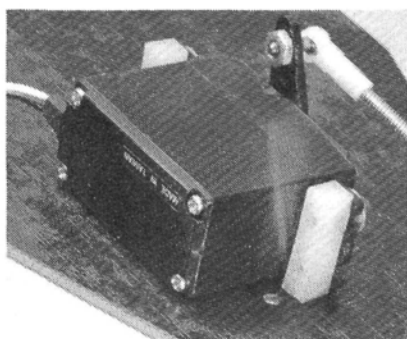
This kit includes all the items needed to make 6- or 7-cell saddle packs or side-by-side packs. It features the new CU 64 battery bars. These pure-copper battery bars have ultra-low resistance and they're bent to fit the battery pack perfectly.

Part no. RC5104

Price: \$6.99

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.





PARMA Servo Mounts

Parma offers sturdy nylon servo mounts

with hardware. Use them to mount any brand of servo to any type of chassis.

Part no. 17219

Price: \$2.50

Parma Int'l Inc., 13927 Progress Pky., N. Royalton, OH 44133; (216) 237-8650.

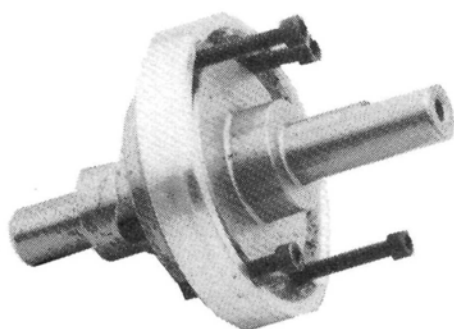
B&R MOTORWORKS Signature Series Stock Motors

This motor has upgraded Silver Graphite brushes and specially tuned springs. It's broken-in and dyno-tested for maximum reliability and speed. It has a hot pink, Epic 4.9 wet-magnet can; a 27-turn, short-stack, slotted armature and approximately 34 degrees of timing. It's NORRCA-approved for the Pro-Stock class.

Part no. 1031

Price: \$28

B&R Mfg. Corp., 28000 Tothill Dr., Saugus, CA 91350; (805) 296-0457.



THORP MFG. Rampage Ball Differential

This ball diff will help to power your 1/10-scale gas Kyosho Rampage through corners, increase its durability and improve its performance. The ball diff uses the stock or steel diff gears. Ball bearings are required for installation.

Part no. 6050

Price: \$55

Thorp Mfg. Inc., 4054 E. Mission Blvd., Pomona, CA 91766; (714) 622-6518.

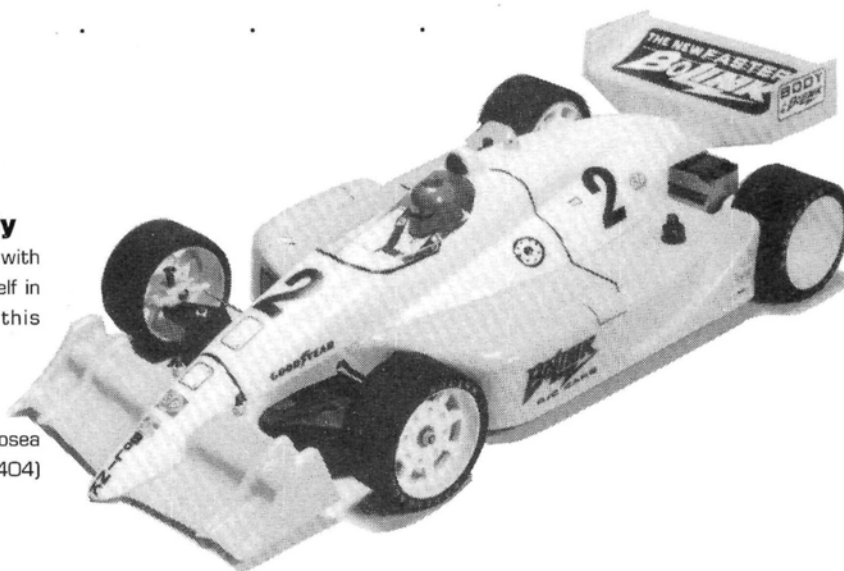
BOLINK Lola T-91 Indy Body

Who knows what you can do with your Bolink Lola body! Put yourself in the driver's seat of one of this century's fastest cars.

Part no. BL-2312

Price: \$18.95

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245; (404) 963-0252.



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NITRO NEWS

(Continued from page 145)

The position of a wing or a spoiler will also help to determine its effect, e.g., a wing installed behind the rear wheels will push down on the rear tires and actually reduce the downforce on the front tires. Front and rear spoilers offset each other to some degree; creating a stable aerodynamic balance is the main goal.

Recently, many 1/8-scale on-roads have been removing the rear wings from their cars and replacing them with rear spoilers. Joined directly to the suspension uprights, a rear spoiler alone provides excellent downforce, and the removal of the wing lowers overall drag. This system works particularly well on 4WD cars if you also install a rigid body support and make the rear spoiler adjustable. A body support, e.g., a thin piece of fiberglass, braces the underside of a Lexan body and prevents it from flexing. With this system, you can change the car's aerodynamics simply by increasing or decreasing the angle of the rear spoiler.

AIR MANAGEMENT

Obviously, a great body is more than just skin deep. Although the differences between one

(Continued on page 178)

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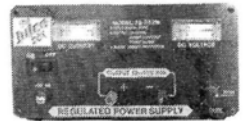
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NITRO NEWS

(Continued from page 175)

body shape and another may be too subtle for intermediate drivers to appreciate, using the appropriate body is important. If you doubt the effects of aerodynamics, try to drive your car with its body removed; the difference will soon be apparent.

After you've tested the old Can-Am standard, why not give a GTP body a try? It's never too late to check out a great bod. ■

LETTERS

(Continued from page 10)

SLIPPIN' AT SEA

I'm in the Navy, stationed on a ship. When I'm at sea, my only contact with the R/C car sport

is your magazine. When I'm in port, I run to the local track to get my fix and to try out the ideas from your magazine and whatever else I can pick up at the track. For the last three years, I've focused all my attention on on-road racing. Recently, the track I race at opened a dirt off-road track. I thought I'd break out my old Kyosho Ultima Pro, but with the advent of the slipper clutch, I'm not sure if it's still competitive. Is there a slipper clutch available for the Ultima Pro's transmission? If not, will a Stealth or a Hydra Drive fit in my Ultima? Is there any hope for my old and trusty Ultima Pro, or will I have to retire it to get a newer, more advanced buggy? Thanks for the years of fun and help.

DON "THE BEAR" DURNIL

CA Division
USS Cowpens

Don't throw away your Ultima Pro just yet, Bear; there's still hope! No one makes a slipper clutch for the stock Ultima tranny and, because of its external gear arrangement, it would be almost impossible to adapt one of the currently available slippers to fit it.

Your best bet: buy the transmission for the Kyosho Triumph. It's available separately and you should be able to bolt it to the Ultima's chassis with some minor modifications. What's more, you'll be able to use the Ultima's drive shafts with the Triumph tranny; because of their different outdrive systems, you couldn't use them with Stealth or Losi trannies.

Besides the slipper clutch, the tranny has a belt drive and an improved version of Kyosho's race-proven ball diff. FM

(Continued on page 224)

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I ONLY NEEDED ONE!



LETTERS

(Continued from page 178)

NAME GAME

I'm one of your most avid fans here in the Philippines; I've bought every issue since February '89. I don't know what I'd be doing if you hadn't entered my R/C life. I've just read the October '92 issue, and I noticed that Jerry Richardson of Mukilteo, WA, suggested a comic strip as a regular feature of your outrageous mag. Well, you responded to it quite positively and you wanted names for the villains and our local boy hero. My friends and I came up with these names for the villains: Glitcher (the big boss); Dumper (his second-in-command); Resistance, Melty and Gearstuck (their flunkies). As for our hero, how about Jerry? After all, he's the one who came up with the idea.

I hope this fan's wish on this matter will be granted by the great Ayatollah of Radio Controlla himself. Keep up the magnificent work!

RONALD V. VILLAFLO
Manila, Philippines

What do you say, campers? We await your votes.
LA

ASLEEP AT THE WHEEL

Awesome magazine, especially the "Nitro News" column. I'm thinking of buying a Kyosho USA-1 Nitro Crusher. I'd be grateful if you would do a "Track Report" on it.

OLIN ELLSWORTH
Warrensburg, NY

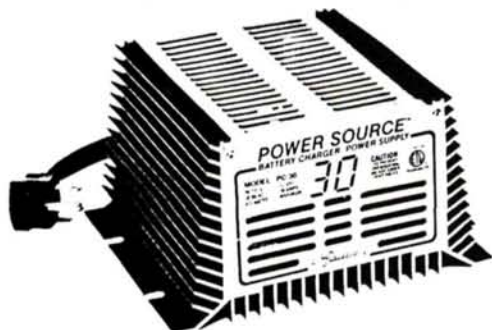
Where have you been, Olin? Ed Schenk did a "Track Report" on the Nitro Crusher in the March 1992 issue of Car Action; it also appeared in the 1992 Monster & Racing Trucks special issue.

Jeff Bronstein will be happy to hear that you like his column. If you have any gas-

(Continued on page 231)

THE POWER SOURCE™ POWER SUPPLIES

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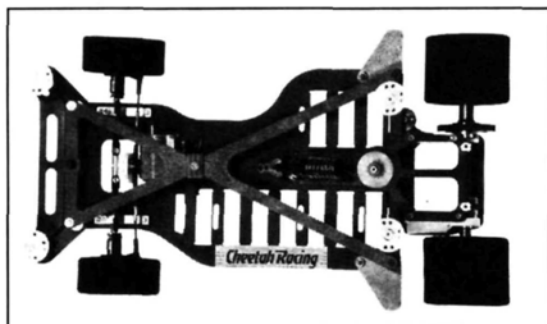
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Kris Moore - Twister
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2. Wider than stock 10LSS camber/caster adjustable front end for more stability.
3. Battery slots will take Panasonic 170's without modifications.
4. Seven battery slots on left, three on right with battery pack strap slots for all pack positions.
5. Unique cross brace system adds strength and rigidity to chassis. Chassis needs more pressure to be twisted than suspension needs to be activated. Cross brace provides transponder mount.
6. All parts are available separately or together making this the most complete and advanced conversion available.

Chassis . . . Part #PS52 Cross Brace & Hardware . . . #PS54

LETTERS

(Continued from page 224)

related questions for him, write to him in care of Car Action, and we'll make sure he gets them. He'd love to hear from you. LA

FRANKENFOOT

After I bought my Kyosho Raider buggy, I started to read your magazine. You inspired me to buy a Tamiya Blackfoot, and I plan to convert it into a racing truck, but the farthest I've gotten so far is buying a JR-XT body. What do you suggest I do?

JUSTIN TWEEDY
Ontario, Canada

If you're serious about racing, Justin, your best bet is to buy a truck that's actually meant

to be raced. The Blackfoot was made more for "backyard bashing," but, eventually, it made its way to the track. As truck racing became more and more popular, companies such as Team Losi, Associated, Traxxas and Schumacher released their own "racing" trucks, and they outperformed the Blackfoot.

If you want to modify your Blackfoot for fun, I suggest that you contact the following companies for after-market performance accessories: Custom Racing Products, 8784 Plata Ln., Atascadero, CA 93422—(805) 466-6945; Robinson Racing Products, 4968 Meadow View Dr., Mariposa, CA 95338—(209) 966-2465; and Thorp Mfg. Inc., 4054 E. Mission Blvd., Pomona, CA 91766 JH

TRANNY TRIBULATIONS

I just bought a Team Losi LX-T. It came without the Hydra Drive transmission, and I'm wondering if the Associated Stealth transmission would work in the LX-T in its place. Also, I've been trying to decide whether to buy the Tekin 411P or the Novak M1c speed controller. Which is the better ESC for off-road racing?

MIKE GETCHELL
Newport News, VA

Whoa, Mike, it's time to lock up the brakes on that thought process, buddy! To clarify, the Hydra Drive is an add-on accessory that Losi produces for their transmission; it isn't a

(Continued on page 238)

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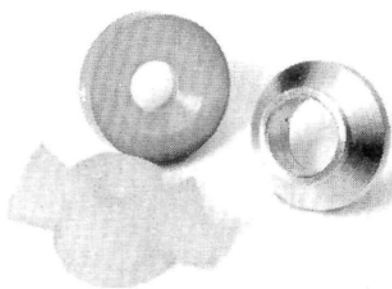
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WHAT'S NEW



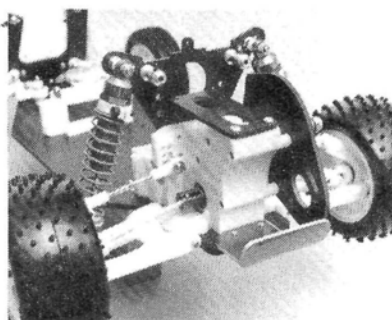
BUD'S RACING PRODUCTS **Differential Thrust Cone Kit**

This kit allows you to use ball bearings in the wheel or wheel hub to act as a thrust bearing, which gives you an ultra-smooth diff setup. It uses a plastic spring washer and a locking wing nut so its setting can easily be adjusted by hand.

Part no. 2140

Price: \$3.95

Bud's Racing Products, 1575 Lowell St., Elyria, OH 44035; (216) 284-0271.



TEAM A&L **Lethal Weapon 2** **with Power Clutch**

This tranny kit is available for the Traxxas TRX-1. The smooth, reliable, belt-drive tranny includes: an upgraded diff for easier maintenance and assembly, the A&L Power Clutch and new dogbones (so you can convert from the standard slider shafts, which won't work with the Lethal Weapon). There are also easy-to-follow instructions.

Part no. 195

Price: \$137

A&L Mfg., P.O. Box 2115, Corona, CA 91718; (714) 735-5249.



PANDA

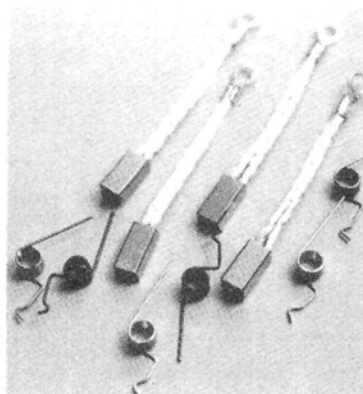
Gas-Powered Testarossa

Panda now offers its 1/10-scale, nitro-powered Testarossa. It comes 80-percent assembled, with an installed Magnum GP .10 engine that has a pull-starter, an automotive-style air filter and a neighbor-friendly, quiet muffler. Other features include an assembled 6061 T4 aluminum chassis, a heavy-duty differential/gearbox, an automatic clutch and brake and adjustable shocks with 4-wheel, adjustable, control-link suspension.

Part no. 014910

Price: \$350

Global Hobby Distributors, 10725 Ellis Ave., Suite E, Fountain Valley, CA 92728-8610; (714) 964-0827.



TRINITY

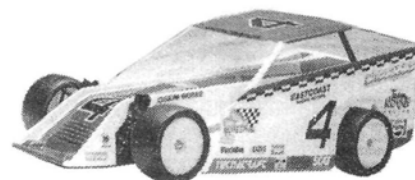
Stock Motor-Tuning Kit

This kit includes everything necessary to tune the latest stock motor: Silver Cavity motor brushes, High Copper hard brushes, medium springs, heavy motor springs, extra-heavy springs and instructions. So if your stocker is slacking, check out this kit.

Part no. 4494

Price: \$9.99

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.



CUSTOM WORKS

Probe Modified Body

Custom Works designed this body after the world's fastest modified, driven by Don McCreddie. It has been engineered for both speed and aerodynamics. Its roof is molded separately so that it may be mounted at the optimum angle for your track's conditions. This body was the choice of the top four finishers at the '92 ROAR Dirt-Oval Nats.

Part no. 9010

Price: \$32

Custom Works, 3720 Easton Dr. #7, Bakersfield, CA 93309; (805) 323-0471.

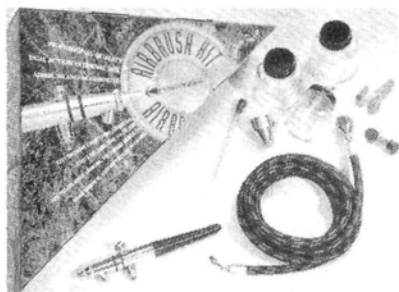


EXTREME MOTORSPORTS **Racing Motors**

Extreme Motorsports builds some of the industry's best racing motors. Former Team Twister motor-builder, Erik Soderquist (Dr. Von Quick), builds each to his exacting specifications. Modified and stock motors are available, as is a full range of high-performance motor accessories.

Prices: \$28 (stock motors); \$80 (hand-wound modifieds).

Extreme Motorsports, 6266 Oakridge Rd., San Diego, CA 92120; (619) 229-1511.



BADGER AIR-BRUSH CO.
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Dual Action Airbrush

This kit features state-of-the-art improvements. The large and medium airbrushes have hardened, stainless-steel, fluid tips and needles. Their interchangeable heads allow quick tip replacements; wing-back levers and easy access handles make needle replacements a snap. The one-piece trigger offers easy disassembly and smooth action, while the bent-trigger design offers more comfort, with very tight control.

Part no. 175:1-7 (separate kits).

Prices: \$90 to \$105

Badger Air-Brush Co., 9128 West Belmont Ave., Franklin Park, IL 60131; (708) 678-3104.



TRAXXAS
Nitro Hawk

The fully assembled Nitro Hawk brings nitro horsepower excitement to 1/10-scale off-road racing. Its Image .12 engine has a heavy-duty mid-engine transmission, a recoil starter, a high-volume air filter and a centrifugal clutch that's coupled with an adjustable slipper clutch. Other features include: a T6 aluminum chassis, extra-long shocks and suspension arms and many more hot items. It's available with or without an installed pistol radio system.

Traxxas, 12150 Shiloh Rd., Dallas, TX 75228; (214) 613-3300.



TAMIYA AMERICA
Super Blackfoot

Tamiya takes the monster truck to the next level with its Super Blackfoot, which features: a die-cast, bevel-gear differential; front and rear, double-wishbone, independent suspension; longer suspension arms; wider wheelbase and dogbone driveshafts. Its center-mounted servo-saver ensures that the tie-rods are the same length for consistent handling in rough turns. It also comes with a three-step mechanical speed controller and a reliable 540 motor.

Part no. 58110

Prices: \$179.50 to \$197.45

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656-4200; (818) 509-8870.



PSE
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for RC10 and RC10T

PSE offers Associated off-road users a light battery brace that won't interfere with battery leads or bars. The slightly offset brace ensures solid support over even the roughest terrain. PSE products are now available worldwide, so ask for them at your local hobby shop or raceway.

Part no. 96030

Price: \$7.50

PSE, 13927 Progress Pkwy., North Royalton, OH 44133; (216) 237-8650.



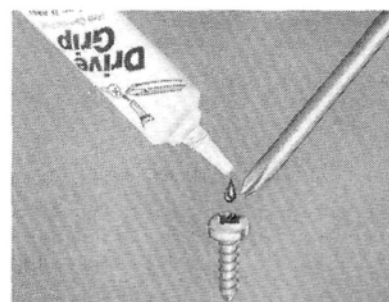
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DuraTrax offers advanced battery technology at affordable prices. Pro-Picked Cells have been electronically conditioned to optimize run times and maximize voltage output. They're available in these styles: Sanyo 1400 SCRs, 1700 SCRs, and Panasonic P-170s. They're also available in 6- and 7-cell packs.

Part nos. DTXC2091; DTXC2082.

Prices: \$62.95; \$73.95.

Great Planes Model Distributors, 1608 Interstate Dr., Champaign, IL 61821; (217) 398-3630.



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ND Industries, 1893 Barrett Rd., Troy, MI 48084; (313) 362-1209.

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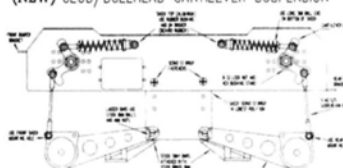
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LETTERS

(Continued from page 231)

transmission itself. As for putting a Stealth transmission in your LX-T, well, it's like putting a Mustang V8 in a Chevy Camaro body. Get the idea? If you still think that you'd rather have the Stealth tranny, just think of all the Losi drivers that make and win A-Mains with their trannys. As for the speed-controller dilemma, it's up to you (and your wallet) to decide; they're both excellent. JH

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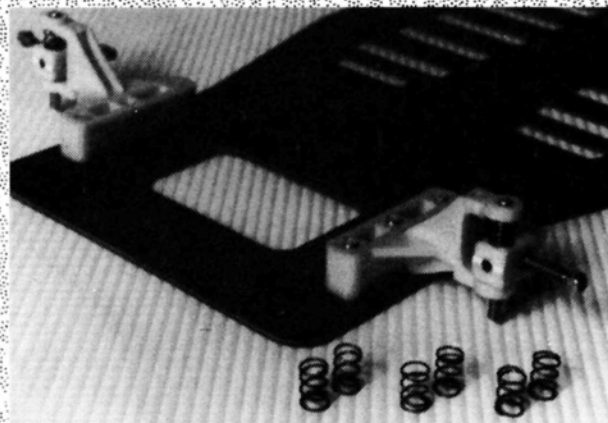
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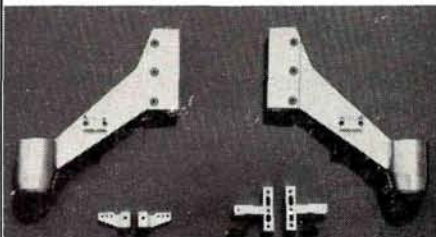
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